

## Classification of the Subfamily Carabinae from Korea (Coleoptera: Carabidae)

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### ABSTRACT

The present paper is a revisional monograph of the subfamily Carabinae Erichson, 1837 from Korea. As the result, a total of 37 species belonging to 13 genera under 2 tribes are represented in Korean fauna, among them 24 subspecies, 3 species, 4 subgenera are new to science.

The following new taxa are proposed: *Orientocarabus* subgen. nov., *Weolseocarabus* subgen. nov., *Nabicarabus* subgen. nov., *Koreacoptolabrus* subgen. nov., *Carabus* (*Parhomopterus*) *sternbergi huchangensis* subsp. nov., *C. (P.) sternbergi honamensis* subsp. nov., *C. (P.) sternbergi kojedoensis* subsp. nov., *C. (P.) sternbergi palgongsanensis* subsp. nov., *C. (P.) sternbergi tongdosanus* subsp. nov., *C. (P.) sternbergi chirisanensis* subsp. nov., *C. (P.) sternbergi sobaeksanensis* subsp. nov., *C. (P.) namhaedoensis* sp. nov., *Lipaster* (*Leptinocarabus*) *wulffiussi ssangnamensis* subsp. nov., *L. (L.) wulffiussi alpinus* subsp. nov., *Leptocarabus* (*Aulonocarabus*) *kwanmobongensis* sp. nov., *L. (Weolseocarabus) koreanus weolseoe* subgen. et subsp. nov., *L. (W.) koreanus minor* subgen. et subsp. nov., *L. (Adelocarabus) seishinensis seunglaki* subsp. nov., *Hemicarabus* (*Homoeocarabus*) *maeander quelpartensis* subsp. nov., *Scambocarabus kruberi hallasanensis* subsp. nov., *Tomocarabus fraterculus affinis* subsp. nov., *T. fraterculus yeongsiki* subsp. nov., *T. fraterculus assimilis* subsp. nov., *Megodontus* (*Nabicarabus*) *vietinghoffi borealis* subgen. et subsp. nov., *Damaster* (*Acoptolabrus*) *seonhyeongae* sp. nov., *D. (Koreacoptolabrus) constricticollis chiricola* subgen. et subsp. nov., *D. (Cotolabrus) jankowskii kangwonensis* subsp. nov., *D. (Coptolabrus) jankowskii elegans* subsp. nov., *D. (C.) smaragdinus sangjaei* subsp. nov., *D. (C.) smaragdinus hongdoensis* subsp. nov., *D. (C.) smaragdinus hoenggandoensis* subsp. nov.

All the known taxa are revised critically, keys, synonymic lists, some illustrations of the genitalic characters are provided, and domestic localities for each species are arranged respectively.

### INTRODUCTION

The ground beetles of the subfamily Carabinae are one of the common groups represented mainly in the northern hemisphere, especially rich in Palaearctic Region. The adults exhibit often

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considerable variation in body size and some species are beautiful with metallic or brilliantly colored. Species of the subtribe Carabina are easily found under stones, logs, barks, debris or running about on the ground, and mostly they hibernate as an adult stage with one generation per year in Korea, the majority are essentially predaceous feeding on many kinds of terrestrial arthropods including insects, earthworms, slugs and land snails containing those harmful to livestock or veterinary, thus many are fairly beneficial. They are known to ingest by means of extraintestinal digestion as they excrete saliva that acts chemically to reduce the flesh to liquid to be ingested, and they often attracted well to the mixture of sugar with alcohol, acetic or lactic acid when collecting. According to Ishikawa (1978), a considerable number of the species is particularly malacophagous in their choice of food, showing a tendency of morphological specialization towards opposite extremes presumably as adaptations to their feeding habits known as stenocephalism or macrocephalism. The stenocephalic species of which the fore body has become narrowly elongated may be adapted to prey on snails by inserting the slender head into the shell, on the other hand the macrocephalic species of which the head is enlarged disproportionately would prey on them by breaking their shells with strong mandibles. Species of the subtribe Calosomina have a pair of well developed hind wings with considerable powers of flight and are attracted to lights when collecting, since they prey chiefly on lepidopterous larvae, particularly those that attack forest, they are often called caterpillarhunters. So, *Calosoma sycophanta* has been imported in large numbers from Europe to United States in order that its predacious habit may be utilized in the control of the gypsy and brown-tail moths. Therefore in the viewpoint of pest control, these ground beetles are very useful to human beings.

In Korea, traditionally the taxonomy of these group has been made numerously and rather extensively in comparing with other beetles, but simultaneously many mistakes owing to the misidentification or undesirable intensive errors, regret to say, had been also included and those were already provisionally amended by the one of the authors, Lee (1977).

Naturally, therefore, it has been existent within some Korean entomologists that a more reliable and reasonable classification system in accordance with the phylogenetic nature should be emerged urgently at least for the sake of guide for students or amateurs. So, it is the authors' purpose to revise and arrange not merely all the known taxa but also new ones of this group introducing the modern reconstructive system based on the genitalic characters rather than superficial ones of traditional use, and indeed the authors determined to embark on the revisional work 3 years ago and made as possible as extensive collecting trips throughout this country excluding the northern area where beyond their touch. For a more credible comparative morphological investigation, abroad specimens were also examined, for instance: all the species occurring in Japan, some of China, Taiwan, Mongolia, Germany, Czechoslovakia, France, Belgium, Italy, Austria, Switzerland, and Chile.

As a result of the present study all the known species or subspecies are revised critically, and totally 37 species belonging to 13 genera are known to occur in Korea, among them 24 subspecies, 3 species, 4 subgenera new to science respectively are added. The keys separating all the taxa known from Korea are given. All the collected domestic localities are appeared here after the administrative geographical names of Republic of Korea, M.R.-Romanization was adopted for notation and the provinces are abbreviated as following for convenience:

CB : Ch'ungch'ŏngbukto	HH : Hwanghaedo
CN : Ch'ungch'ŏngnamdo	HN : Hamgyŏngnamdo
GB : Kyŏngsangbukto	JB : Chŏllabukto
GG : Kyŏnggido	JJ : Chejudo
GN : Kyŏngsangnamdo	JN : Chŏllanamdo
GW : Kangwŏndo	PB : P'yŏnganbukto
HB : Hamgyŏngbukto	PN : P'yŏngannamdo

Type-specimens and other most material treated here will be deposited in the first author's collections of Systematic Entomology Laboratory, Department of Agricultural Biology, College of Agriculture, Kyungpook National University.

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#### HISTORICAL REVIEW

Previous work on the Korean Carabinae is rather extensive and many have been published numerously, and its fundamental taxonomy was constructed mainly by the endeavor of Lapouge (1929-1932) and Breuning (1932-1936).

So far as the authors are aware, Tatum (1847) was the first who described *Carabus monilifer* (= *Damaster smaragdinus monilifer*) from Korea, noted as "It was found by A. Adams., Esq., during the voyage of H.M.S. Samarang in the Eastern Seas, in the Corean Archipelago." Indeed the collector, Arthur Adams was a crew doctor of the warship and visited Is. Quelpart (=Is. Chejudo: 1843-1846) and collected many insects, and later the type material of the above beetle was proven from this island.

Kraatz (1879) recorded *Carabus longipennis* (= *Damaster smaragdinus fulminifer*) occurring in Korea. Kolbe (1886) recorded *Calosoma chinense* firstly from Korea, he also cited *Coptolabrus longipennis* (= *Damaster smaragdinus fulminifer*) and *C. monilifer* (= *D. smaragdinus monilifer*) occurring in Korea. Heyden (1887) reported *Carabus fiduciaris*, *C. tuberculosus* and *Coptolabrus longipennis* (= *Damaster smaragdinus fulminifer*) from Korea. Taczanowski (1888) described *Carabus (Coptolabrus) Branickii* (sic, = *Damaster smaragdinus branickii*) based on the material from Seoul. Bates (1888) recorded *Carabus van-volxemi* (=error for *Lipaster wulffi*) (*opacipennis*), *C. tuberculosus*, *C. bilbergi* (sic), *Coptolabrus smaragdinus*, and described *Coptolabrus leechi* (=a junior synonym of *Damaster constricticollis*) based on the material collected by Leech who paid a visit of 6 week's duration (May to June, 1886) to the eastern side of the Korean Peninsula. Kraatz (1889) recorded *Coptolabrus Branicki* (sic, = *Damaster smaragdinus branickii*) from Seoul. Roeschke (1898) described *Carabus sternbergi* and *C. sternbergi* var. *angustus* from Korea, based on the material from Gensan (=Wonsan) collected by Staudinger. Semenow (1898a) recorded *Coptolabrus branickii* (partim, = *Damaster smaragdinus branickii*; partim, *D. smaragdinus fulminifer*) from Korea. He (1898c) also reported *Carabus (Eocarabus) Jankowskii* (sic) occurring

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in Korea. Reitter (1895) reported *Coptolabrus Jankowskii* (sic), and described *Coptolabrus pyrophorus* (= *Damaster smaragdinus fulminifer*), *Carabus* (*Eurycarabus*) *fraterculus*, *C.* (*Leptinocarabus*) *Wulfini* (sic), *C.* (*Leptocarabus*) *semiopacus*, and *C.* (*Aulonocarabus*) *Koreanus* (sic), all based on the material from Korea collected by Staudinger and Bang-Haas without given the detailed localities. Born (1907) described *Coptolabrus jankowskii fusanus* from Korea. Lapouge (1911) recorded *Calosoma chinense* and *Carabus tuberculosus*, he also described *Carabus* (*Coptolabrus*) *smaragdinus tyrannus* (= *Damaster smaragdinus monilifer*), *C. fiduciaris insularis* (= *C. fiduciaris saishutoicus*) and *C. Touzalini* (sic, = *C. sternbergi touzalini*) from Is. Chejudo. Born (1913) noted *Carabus Sternbergi* nom (sic) from Gensan (= Wönsan) in his description of *C. Sternbergi lauschanensis* (sic). Hauser (1913) described *Coptolabrus Oudoti* (sic, = *Damaster smaragdinus branickii*) based on the material from Chemulpo (= Inch'ön). Roeschke (1916) described *Carabus* (*Coptolabrus*) *fulminifer* (= *Damaster smaragdinus fulminifer*) based on the material from the vicinity of Wönsan. Hauser (1921) recorded or described the following carabids in his monograph: *Carabus* (*Coptolabrus*) *constricticollis grallatorius*, *C.* (*Acoptolabrus*) *leechi* (= *Damaster constricticollis*), *C.* (*Coptolabrus*) *jankowskii*, *C.* (*C.*) *jankowskii fusanus*, *C. monilifer* (= *Damaster smaragdinus monilifer*), *C.* (*C.*) *smaragdinus coreicus* (= *D. smaragdinus fulminifer*), *C.* (*C.*) *oudoti* (= *D. smaragdinus branickii*), *C.* (*C.*) *smaragdinus pinganensis* (= *D. smaragdinus fulminifer*), *C.* (*C.*) *branickii* (= *D. smaragdinus branickii*), *C.* (*C.*) *fulminifer* (= *D. smaragdinus fulminifer*), and *C.* (*C.*) *tyrannus* (= *D. smaragdinus monilifer*). Born (1922) described *Coptolabrus planus* (= *Damaster smaragdinus fulminifer*) and *Carabus auricollis* (= *C. fiduciaris kirinicus*) based on the material from Korea, without referring the detailed localities. Kano (1923) listed 7 sorts of *Carabus* group in Korea: *Carabus DeHaani* (sic, = error for *Carabus sternbergi*), *C. Vanvolxemi* (sic, = error for *Lipaster wulffiusi opacipennis*), *C. tuberculosus*, *C. bilbergi* (sic), *Coptolabrus Laffosei* (sic, = error for *Damaster smaragdinus fulminifer*), *C. smaragdinus*, *C. Leechi* (sic, = *D. constricticollis*), and he also noted that *Carabus insulicola* and *Damaster blaptoides* would be possibly occurred in Korea as presumed by Doi (but in fact, these are incorrect), further he (1924) revised his own the former list and recorded 10 kinds with adding *Calosoma chinense*, *Carabus fiduciaris*, and *Coptolabrus longipennis* (= *Damaster smaragdinus fulminifer*). Okamoto (1924) recorded 3 species from Is. Chejudo: *Carabus Albrechti* (sic, = error for *C. sternbergi touzalini*), *C. tuberculatus* var. *granosus* (= *Hemicarabus tuberculosus*), and *Coptolabrus monilifer* (= *Damaster smaragdinus monilifer*). Lapouge (1924) described *Calosoma Taqueti* (sic, = *C. maximowiczii*) based on the material from Is. Chejudo. Csiki (1927) catalogued 23 carabids known to occur in Korea from his world catalogue as: *Calosoma Maximowiczii* (sic), *C. Maximowiczii* var. *Taqueti* (sic), *C.* (*Charmosta*) *Maderae* var. *chinense* (sic), *Carabus* (*Acoptolabrus*) *constricticollis* var. *grallatorius*, *C.* (*A.*) *Leechi* (sic, = *Damaster constricticollis*), *C.* (*Coptolabrus*) *Branickii* (sic, = *D. smaragdinus branickii*), *C.* (*C.*) *fulminifer* (= *D. smaragdinus fulminifer*), *C.* (*C.*) *Horvathi* (sic, = a junior synonym of *D. smaragdinus branickii*), *C.* (*C.*) *Jankowskii* (sic), *C.* (*C.*) *Jankowskii* var. *fusanus* (sic), *C.* (*C.*) *Oudoti* (sic, = *D. smaragdinus branickii*), *C.* (*C.*) *Oudoti* var. *pinganensis* (= *D. smaragdinus fulminifer*), *C.* (*C.*) *smaragdinus* var. *coreicus* (= *D. smaragdinus fulminifer*), *C.* (*C.*) *tyrannus* (= *D. smaragdinus monilifer*), *C.* (*Tomocarabus*) *fraterculus*, *C.* (*Hemicarabus*) *tuberculosus*, *C.* (*Carabus* Sect. *Tylocarabus*) *Sternbergi* (sic), *C.* (*C.* Sect. *T.*) *Touzalini* (sic, = *C. sternbergi touzalini*), *C.* (*C.* Sect. *Ohomopterus*) *kirinicus* (= *C. fiduciaris kirinicus*), *C.* (*C.* Sect. *Isiocarabus*) *fiduciaris* var. *saishutoicus*, *C.* (*C.* Sect. *Leptinocarabus*) *cyaneoviolaceus* var. *Wulffiusi* (sic, = *Lipaster wulffiusi*), *C.* (*C.* Sect. *Aulonocarabus*) *koreanus* and *C.* (*C.* Sect. *Adelocarabus*) *semiopacus*. Breuning (1927) listed *Calosoma maximowiczii* var. *taqueti* occurring in Is. Chejudo in his monograph. Mori (1928) listed "Saishu-osamushi" (= *Damaster smaragdinus monilifer*) from Is. Chejudo. Breuning (1928) noted or described the following carabids from Korea: *Carabus* (*Coptolabrus*) *fulminifer* (= *Damaster smaragdinus fulminifer*), *C.* (*C.*) *Branickii* (sic, = *D. smaragdinus branickii*), *C. Billbergi f. pumila* (sic), *C. Billbergi manifestus* var. *chicuanus*

(=error for *C. sternbergi*, although the type-locality was given as Chi-kuan-Shan, it is not in Korea indeed but in Liaoning, Southern Manchuria of China, adjacent to the northwestern area of Korean Peninsula), *C. Billbergi Sternbergi* (sic, =*C. sternbergi*) and *C. Billbergi Sternbergi f. angusta* (sic, =*C. sternbergi angustus*).

Lapouge (1929-1932) extensively treated 19 Korean carabids in his famous monograph: *Calosoma* (*Callipara*) *maximowiczii taqueti*, *Coptolabrus* (*Acoptolabrus*) *leachi* (sic, =*Damaster constricticollis*), *C. (Coptolabrus) smaragdinus smaragdinus fulminifer* (= *D. smaragdinus fulminifer*), *C. (C.) smaragdinus smaragdinus monilifer* (= *D. smaragdinus monilifer*), *C. (C.) smaragdinus smaragdinus tyrannus* (= *D. smaragdinus monilifer*), *C. (C.) smaragdinus branickii* (partim), *C. (C.) smaragdinus branickii var. oudoti* (= *D. smaragdinus branickii*), *Eocarabus jankowskii fusanus*, *E. jankowskii jankowskii*, *Hemicarabus (Hemicarabus) tuberculosus*, *Leptocarabus (Leptinocarabus) wulffiusi opacipennis*, *L. (Adelocarabus) koreanus*, *L. (A.) semiopacus*, *L. (A.) seishinensis* (described as new), *Morphocarabus (Apocarabus) bilbergi manifestus chicuanus* (sic, =error for *Carabus sternbergi*, "Chikua" is not in Korea but in Liaoning, S. Manchuria of China), *M. (Parhomopterus) sternbergi touzalini*, *M. (P.) sternbergi sternbergi*, *M. (Isiocarabus) fiduciarius insularis* (= *Carabus fiduciarius saishutoicus*), and *Apotomopterus (Ohomopterus) dehaani striatus* (sic, = *C. fiduciarius kirinicus*). Kano (1930) reported *Carabus granulatus yezoensis* (=error for *C. granulatus ussuriensis*) from Korea. Matsumura (1931) illustrated 3 carabids which known to Korean fauna in his famous work: *Calosoma maderae f. chinense*, *Carabus (Coptolabrus) oudoti* (= *Damaster smaragdinus branickii*), and *C. (Hemicarabus) tuberculatus f. granosus* (= *Hemicarabus tuberculosus*).

Breuning (1932-1936) revised and arranged the following Korean carabids in his extensive world monograph: *Carabus (Apotomopterus Sect. Isiocarabus) fiduciarius n. gisellae* (= *C. fiduciarius saishutoicus*), *C. (A. Sect. I.) fiduciarius n. kirinicus*, *C. (Carabus Sect. Eucarabus) canaliculatus n. careniger*, *C. (C. Sect. E.) pseudokoreanus*, *C. (C. Sect. E.) koreanus*, *C. (C. Sect. E.) kulzeri* (= *L. gossarei kulzeri*), *C. (C. Sect. E.) semiopacus*, *C. (C. Sect. E.) seishinensis*, *C. (C. Sect. E.) venustus n. venustus* (= *Lipaster wulffiusi wulffiusi*), *C. (C. Sect. E.) venustus n. opacipennis* (= *L. wulffiusi opacipennis*), *C. (C. Sect. E.) hummeli m. tristicula*, *C. (C. Sect. E.) aurocinctus*, *C. (C. Sect. E.) arvensis conciliator m. faldermanni* (= *C. conciliator faldermanni*), *C. (C. Sect. E.) billbergi m. pumila*, *C. (C. Sect. E.) manifestus n. chicuanus* (=error for *C. sternbergi*, "Chi-kuan-Shan" is not in Korea but in Liaoning, S. Manchuria of China), *C. (C. Sect. E.) sternbergi n. sternbergi*, *C. (C. Sect. E.) sternbergi m. angusta*, *C. (C. Sect. Trachycarabus) latreillei latreillei m. inchanica*, *C. (C. Sect. T.) latreillei latreillei m. mandschurensis*, *C. (C. Sect. T.) latreillei semicoriaceus*, *C. (C. Sect. Carabus) granulatus yezoensis n. telluris* (= *C. granulatus ussuriensis*), *C. (C. Sect. C.) clathratus maacki n. maacki*, *C. (Hemicarabus Sect. Hemicarabus) tuberculosus*, *C. (H. Sect. H.) mac-leayi n. mac-leayi* (sic, = *H. macleayi coreensis*), *C. (H. Sect. H.) mac-leayi m. coreensis* (sic), *C. (Eurycarabus Sect. Tomocarabus) fraterculus*, *C. (E. Sect. Scambocarabus) kruberi*, *C. (Coptolabrus Sect. Acoptolabrus) schrencki*, *C. (C. Sect. A.) constricticollis*, *C. (C. Sect. Coptolabrus) jankowskii jankowskii n. jankowskii*, *C. (C. Sect. C.) jankowskii jankowskii n. fusanus*, *C. (C. Sect. C.) jankowskii quelpartianus n. quelpartianus*, *C. (C. Sect. C.) smaragdinus smaragdinus n. mandschuricus* (partim, = *Damaster smaragdinus fulminifer*), *C. (C. Sect. C.) smaragdinus smaragdinus n. longipennis* (partim, = *D. smaragdinus fulminifer*), *C. (C. Sect. C.) smaragdinus smaragdinus n. monilifer* (= *D. smaragdinus monilifer*), *C. (C. Sect. C.) smaragdinus branickii n. pinganensis* (partim, = *D. smaragdinus fulminifer*), *C. (C. Sect. C.) smaragdinus branickii n. fulminifer* (= *D. smaragdinus fulminifer*), and *C. (C. Sect. C.) smaragdinus branickii n. branickii*.

Cho (1934) recorded 5 species from Mt. Kwanmobong: *Carabus granulatus var. yezoensis* (=error for *C. granulatus ussuriensis*), *Leptocarabus opaculus* (=error for *Tomocarabus fraterculus*), *Leptinocarabus cyaneoviolaceus var. wulffiusi* (= *Lipaster wulffiusi*), *Coptolabrus jankowskii*, and *Coptolabrus smaragdinus var. antungensis* (= *Damaster smaragdinus fulminifer*). Mochizuki (1935) listed 5 species from Pujŏn'gowŏn Plateau: *Coptolabrus smaragdinus*, *Carabus septem-rinatus* (=error for *Leptocarabus koreanus*), *C. monilis var. excellens* (=error for *Megodontus*

vietinghoffi), *C. granulatus* ab. *dauricus* (= *C. granulatus ussuriensis*) and *Eutercia conciliator* (sic). Haku (1936) recorded *Carabus branickii* (= *Damaster smaragdinus branickii*) from the vicinity of Taegu. Mochizuki (1936) recorded *Leptocarabus opaculus* (=error for *Tomocarabus fraterculus*) in his list. Morita (1936) listed and noted some observation of *Carabus tuberculatus* (= *C. tuberculosus*). Masaki (1936) recorded *Calosoma maderae* (=error for *Campalita chinense*) from Is. Kanghwado. Wu (1937) included Korea in the distribution of 5 Chinese carabids in his catalogue: *Calosoma maximoviczi* (sic), *C. maximoviczi* var. *touzalini* (sic), *C. maderae* var. *chinense*, *Carabus* (*Carabus* Sect. *Tylocarabus*) *sternbergi* and *C.* (*C.* Sect. *Leptinocarabus*) *cyaneoviolaceus* var. *wulffiusi* (= *Lipaster wulffiusi*). Mori et Cho (1937) reported 4 species of *Calosoma* group in Korea: *Calosoma cycophanta* (=error for *C. inquisitor cyanescens*), *C. maximoviczi* (sic), *C. denticolle* (=error for *Charmosta lugens*), and *C. maderae* (=error for *Campalita chinense*). Mochizuki et Tsunekawa (1937) recorded 7 kinds in his list: *Carabus ohomopterus mayasanus* (sic, =error for *C. sternbergi*), *C. tuberculosus granosus* (= *C. tuberculosus*), *Calosoma maderae* (= *Campalita chinense*), *Coptolabrus jankowskii*, *C. oudoti* (= *Damaster smaragdinus branickii*), *C. smaragdinus antungensis* (=error for *D. smaragdinus branickii*), and *Leptocarabus opaculus* (=error for *Tomocarabus fraterculus*). Doi (1938) recorded 2 unidentified *Carabus* spp. from Kaemagowŏn Plateau. Narita (1939) recorded 2 species in his list: *Carabus mayasanus* (=error for *C. sternbergi*) and *C. oudoti* (= *Damaster smaragdinus branickii*). Mochizuki et Masui (1939) listed 4 species in Korea: *Carabus ohomopterus mayasanus* (sic, = *C. sternbergi*), *Calosoma maderae* (= *Campalita chinense*), *Coptolabrus oudoti* (= *Damaster smaragdinus branickii*), and *Leptocarabus opaculus* (=error for *Tomocarabus fraterculus*). Hirayama (1940) recorded or illustrated the following species: *Calosoma maderae chinense* (= *Campalita chinense*), *Carabus jankowskii* (=error for *Damaster smaragdinus fulminifer*), *C. jankowskii* var. *fusanus*, *C. fulminifer* (= *D. smaragdinus fulminifer*), *C. tuberculatus granosus* (= *Hemicarabus tuberculosus*), and *Calosoma maximoviczi* (sic). Jeannel (1940) included Korea in the distributional range of *Calosoma Maximoviczi* (sic) and *Campalita chinense*, in his monograph. Ishii (1940) recorded 4 sorts in his list of Korean Coleoptera: *Calosoma maderae* (=error for *Campalita chinense*), *Carabus ohomopterus mayasanus* (=error for *C. sternbergi*), *Coptolabrus oudoti* (sic, = *Damaster smaragdinus branickii*), and *C. smaragdinus* (sic). Ohane et al. (1941) listed *Coptolabrus oudoti* (= *D. smaragdinus branickii*) from Korea.

Yano (1941) listed 40 carabids in Korea: *Calosoma maximoviczi* (sic), *C. maximoviczi taqueti* (sic), *C. maderae* (=error for *Campalita chinense*), *C. maderae chinensis* (= *C. chinense*), *Carabus* (*Acptolabrus*) *constricticollis*, *C.* (*A.*) *grallalorius* (sic, = *Damaster constricticollis*), *C.* (*A.*) *leechi* (= *D. constricticollis*), *C.* (*Coptolabrus*) *branickii* (=error for *smaragdinus fulminifer*), *C.* (*C.*) *elysii* (= *D. smaragdinus fulminifer*), *C.* (*C.*) *fulminifer* (= *D. smaragdinus fulminifer*), *C.* (*C.*) *jankowskii*, *C.* (*C.*) *jankowskii fusanus*, *C.* (*C.*) *horvathi* (= *D. smaragdinus branickii*), *C.* (*C.*) *oudoti* (=partim, *D. smaragdinus fulminifer*), *C.* (*C.*) *oudoti pinganensis* (= *D. smaragdinus fulminifer*), *C.* (*C.*) *smaragdinus coreicus* (= *D. smaragdinus fulminifer*), *C.* (*C.*) *smaragdinus monilifer* (=error for *D. smaragdinus fulminifer*), *C.* (*C.*) *smaragdinus monilifer* (=error for *D. smaragdinus fulminifer*), *C.* (*C.*) *tyranus* (= *D. smaragdinus monilifer*), *C.* (*Hemicarabus*) *tuberculosus*, *C.* (*Tomocarabus*) *fraterculus*, *C.* (*Limnocarabus*) *aquatilis* (=error for *Apotomopterus clathratus maackii*), *C. granulatus*, *C.* (*Tylocarabus*) *sternbergi*, *C.* (*T.*) *sternbergi angustus*, *C.* (*T.*) *touzalini* (= *C. sternbergi touzalini*), *C.* (*Ohmopterus*) *vanvolxemi* (sic, =error for *Lipaster wulffiusi opacipennis*), *C.* (*O.*) *kirinicus*, *C.* (*O.*) *dehaani* (sic, =error for *Carabus sternbergi*), *C. aurocinctus*, *C.* (*Isiocarabus*) *fiduciaris saishudonicus* (sic), *C.* (*Leptocarabus*) *harmandi* (=error for *Leptocarabus seishinensis*), *C.* (*Adelocarabus*) *seishinensis*, *C.* (*Trachycarabus*) *mannerheimi* (= *Lipaster latreillei mandschurenensis*), *C.* (*Leptinocarabus*) *cyaneoviolaceus wulffiusi* (sic, = *Lipaster wulffiusi wulffiusi*), *C.* (*Aulonocarabus*) *camaliculatus* var. *careniger* (sic), *C.* (*A.*) *koreanus*, *C.* (*A.*) *kuleri* (sic, = *Leptocarabus gossarei kulzeri*), *C. bilbergi* (sic), *Damaster blaptoides* (apparently an error, the specimen recorded from "heizo" was indeed not that collected from Korea but that from Japan), and *Cychrus koltzai*

(=error for *Cychnus coreicus*). Consequently among them, *Damaster blaptoides* must be eliminated from Korean fauna as noted above. Beheim et Breuning (1943) described or revised the following carabids from Korea: *Eucarabus canaliculatus rufinus* (the given type-locality, Chi-kuan-Shan is not in Korea indeed but in Liaoning, S. Manchuria of China), *E. vogti*, *E. gossarei kulzeri*, *E. vogtianus*, *E. seishinensis*, *E. semiopacus*, and *E. hummeli*. Cho (1947) listed 3 carabids from Mt. Kŭmgangsŏn: *Coptolabrus branickii* (=error for *Damaster smaragdinus fulminifer*), *C. jankowskii*, and *Leptocarabus opaculus* (=error for *Tomocarabus fraterculus*). Kurosa (1949) included Is. Chejudo in the distributional range of 2 Japanese carabids: *Carabus albrechti* (=error for *C. sternbergi touzalini*), and *C. dehaani* (sic, =*C. fiduciarius saishutoicus*). Breuning (1950a) described *Cychnus coreicus* based on the material from Mt. Baji (=Mt. Mayisan near Mt. Kwanmŏbong). He (1950b) also noted on *Coptolabrus leechi* (= *Damaster constricticollis*) as a valid species represented in Korea. Yokoyama or Habu (1950) included Korea in the distributional range of the following Japanese species: *Carabus opaculus* (error for Korean fauna), *C. dehaanii* (error for Korean fauna), *C. tuberculosus*, *Calosoma maderae* var. *chinense*, *C. maximowiczii*, *C. maximowiczii* var. *taqueti*. Among them *Carabus opaculus* and *C. dehaanii* are in reality just endemic to Japan Proper and are referable to *Tomocarabus fraterculus* and *Carabus fiduciarius* respectively in Korean fauna. Mandl (1954) described *Acoptolabrus constricticollis* m. *latioricollis* from Korea and compared it with the nominate one. Nakane et Iga (1955) included Korea in the distributional range of 4 Japanese carabids: *Calosoma maximowiczii*, *Campalita chinense*, *Hemicarabus tuberculosus*, and *Carabus granulatus telluris* (=error for *C. granulatus ussuriensis*). Cho (1955) recorded *Calosoma maximowiczii* (sic) from Is. Ullŭngdo.

Cho (1957) listed the following carabids in his catalogue of Korean beetles: *Calosoma denticolle* (=error for *Charmosta lugens*), *C. macierae* (=error for *Campalita chinense*), *C. maximowiczii* (sic), *C. sycophanta* (=error for *C. investigator cyanescens*), *Carabus dehaanii* (sic, =error for *C. fiduciarius*), *C. insulicola* (=error for *C. sternbergi*), *C. japonicus* ab. *mayasanus* (=error for *C. sternbergi*), *C. albrechti* (=error for *C. sternbergi touzalini*), *C. fiduciarius gisellae* (= *C. fiduciarius saishutoicus*), *C. fiduciarius kirinicus*, *C. canaliculatus careniger*, *C. pseudokoreanus*, *C. koreanus*, *C. kulzeri* (= *Leptocarabus gossarei kulzeri*), *C. opaculus* (=error for *Tomocarabus fraterculus*), *C. procerulus* var. *tenuiformis* (apparently error), *C. semiopacus*, *C. seishinensis*, *C. venustus* (= *Lipaster wulffiusi*), *C. venustus opacipennis* (= *L. wulffiusi opacipennis*), *C. hummeli*, *C. hummeli tristicula*, *C. aurocinctus*, *C. conciliator*, *C. conciliator haldermanni* (sic), *C. billbergi*, *C. billbergi humila* (sic), *C. manifestus chicanus* (= *C. sternbergi*), *C. sternbergi*, *C. sternbergi lauschanensis* (apparently error), *C. latreillei inshanica* (sic), *C. laterillei mandschurensis*, *C. latreillei semicoricous* (sic), *C. van-volxemi* (=error for *Lipaster wulffiusi opacipennis*), *C. granulatus telluris* (=error for *C. granulatus ussuriensis*), *C. clathratus maacki*, *C. auratus* (apparently error), *C. truncaticollis* (=error for *C. billbergi*), *C. tuberculosus*, *C. mac-leayi*, *C. mac-leayi corensis* (sic), *C. fraterculus*, *C. kruberi*, *C. infantulus* (apparently error), *C. septemcarinatus* (=error for *C. koreanus*), *C. schrencki*, *C. constricticollis*, *C. rugipennis* (apparently error), *C. jankowskii*, *C. jankowskii fusanus*, *C. jankowskii quelpartianus*, *C. fruhstorferi* (apparently error), *C. smaragdinus*, *C. smaragdinus longipennis* (= *Damaster smaragdinus fulminifer*), *C. smaragdinus monilifer*, *C. smaragdinus pinganensis* (= *D. smaragdinus fulminifer*), *C. smaragdinus fulminifer*, *C. smaragdinus coreicus* (= *D. smaragdinus fulminifer*), *C. smaragdinus branickii* (sic), and *C. blaptoides* (apparently error). Among these, the following abroad species which were mostly due to the intentional error as discussed later must be excluded from the Korean fauna: *Carabus procerulus* var. *tenuiformis*; *C. sternbergi lauschanensis*, *C. auratus*, *C. infantulus*, *C. rugipennis*, *C. fruhstorferi*, and *C. blaptoides*. Kim (1958) recorded *Calosoma maximowiczii* and *Carabus gehini* (=error for *Damaster smaragdinus branickii*). For. Exp. Stat. Kor (1959) listed 2 species from Kwangnŭng: *Carabus dehaanii* (sic, =error for *C. fiduciarius*), and *C. insulicola* (=error for *C. sternbergi*). Kim (1960) recorded *Carabus gehini* (=error for *Leptocarabus koreanus*) from Mt. Sŏlaksan. Nakane (1962) included in the distribution of the following species in his monograph: *Calosoma maximowiczii*, *Campalita*

*chlnense*, *Hemicarabus tuberculosus*, *Carabus (Eutelocarabus) conciliator*, *C. (s. str.) granulatus ussuriensis*, *Damaster jankowskii* and *D. jankowskii quelpartianus*. Cho (1963a) listed the following 7 carabids from Is. Chejudo: *Carabus albrechti* (=error for *C. sternbergi touzalini*), *C. tuberculosus*, *C. smaragdinus monilifer*, *C. fiduciaris gisellae* (=C. *fiduciaris saishutoicus*), *C. sternbergi*, *C. jankowskii quelpartianus*, and *C. fruhstorferi* (=error for *Damaster jankowskii quelpartianus*).

Cho (1963b) also reported 57 kinds of *Carabus* group from Korea: *Carabus dehaani* (sic, apparently an error, the specimen recorded from "Haezu" was indeed not that collected from Korea, but that of the nominate subspecies from Honshu, Japan), *C. insulicola* (=error for *C. fiduciaris saishutoicus*), *C. japonicus* ab. *mayasanus* (=error for *C. sternbergi*), *C. albrechti* (=error for *C. sternbergi*), *C. fiduciaris gisellae* (=C. *fiduciaris saishutoicus*), *C. fiduciaris kirinicus*, *C. cancellulatus careniger* (sic et partim), *C. pseudokoreanus*, *C. koreanus*, *C. kulzeri* (=Leptocarabus *gossare* *kulzeri*), *C. opaculus* (=error for *Tomocarabus fraterculus*), *C. semiopacus*, *C. seishinensis*, *C. procerulus* (=apparently an error, the specimen recorded from "Haezu" was indeed not that collected in Korea, but that of the nominate subspecies from Honshu, Japan), *C. venustus* (=Lipaster *wulffi* *wulffi*), *C. venustus wulffi* (=L. *wulffi* *wulffi*), *C. venustus opacipennis* (=L. *wulffi* *opacipennis*), *C. hummeli* (=error for *Megodontus vietinhoffi*), *C. hummeli tristicula*, *C. aurocinctus*, *C. conciliator*, *C. conciliator faldermanni*, *C. arvensis hokkaidensis* (=error for *C. conciliator faldermanni*), *C. billbergi pumila*, *C. manifestus chicanus* (=C. *sternbergi*, the recorded locality "Chi-kuan-shan" is not in Korea but in reality in Liaoning, S. Manchuria of China), *C. sternbergi*, *C. sternbergi lauschanensis* (=apparently an error, not in Korea but in China), *C. latreillei inshanica* (sic), *C. latreillei mandschurensis*, *C. latreillei semicoriaceus*, *C. van-volxemi* (=error for *Lipaster wulffi* *opacipennis*), *C. granulatus yezoensis* (=error for *C. granulatus ussuriensis*), *C. granulatus telluris* (=error for *C. granulatus ussuriensis*), *C. clathratus maacki*, *C. auratus* (=apparently an error, the specimen recorded from Seoul was indeed not that collected in Korea, but that from Europe), *C. truncaticollis* (=error for *C. billbergi pumilus*), *C. tuberculosus*, *C. macleayi*, *C. macleayi coreensis*, *C. fraterculus*, *C. kruberi*, *C. brandti* (=apparently an error, the specimen recorded from Punyung (=Puryong) was indeed not that collected in Korea, but that from China), *C. infantulus* (=apparently an error, not in Korea but in China), *C. septemcarinatus* (=error for *Leptocarabus koreanus*), *C. schrencki*, *C. constricticollis*, *C. rugipennis* (=apparently an error, the specimen recorded from "Kaesung" was indeed not that collected in Korea, but that from Hokkaido, Japan), *C. jankowskii*, *C. jankowskii fusanus*, *C. jankowskii quelpartianus*, *C. fruhstorferi* (=error for *Damaster jankowskii*), *C. smaragdinus manchuricus* (=D. *smaragdinus fulminifer*), *C. smaragdinus longipennis* (=D. *smaragdinus fulminifer*), *C. smaragdinus monilifer*, *C. smaragdinus pinganensis* (=D. *smaragdinus fulminifer*), *C. smaragdinus fulminifer*, and *C. smaragdinus branickii*. Among them, as noted above, the following 7 species, *Carabus dehaani* (sic), *C. procerulus*, *C. sternbergi lauschanensis*, *C. auratus*, *C. brandti*, *C. infantulus*, and *C. rugipennis* must be excluded from Korean fauna.

Nakane (1963) included Korea in the distributional range of 4 Japanese species: *Calosoma maximowiczii*, *Campalita chinense*, *Hemicarabus tuberculosus*, and *Carabus conciliator*. Ku (1963) listed *Carabus procerulus* (=error for *Leptocarabus seishinensis*) in his collecting report. Cho (1965) recorded *Calosoma maximowiczii* (sic) again in his insect list of Is. Ullungdo. Suda (1965) included Korea in the distribution of 2 Japanese carabids: *Calosoma maximowiczii*, and *Campalita chinense*. Ishikawa (1966) noted on a male specimen referable to *Carabus (Aulonocarabus) pseudokoreanus* from Mt. Kanbozan (=Mt. Kwanmobong), but it may be possibly a new one. Nakane et al. (1966) included Korea in the distribution of 3 Japanese species: *Campalita chinense*, *Calosoma maximowiczii*, and *Hemicarabus tuberculosus*. Educ. Min. (1967) listed 2 species from Mt. Sölaksan: *Carabus gehini* (=error for *Leptocarabus koreanus*) and *Calosoma maximowiczii*. Cult. & Inf. Min. (1968) listed 7 species from Is. Chejudo: *Carabus albrechti* (=error for *C. stern-*

bergi), *C. tuberculosus*, *C. smaragdinus monilifer*, *C. fiduciarus gisellae* (= *C. fiduciarus saishutoicus*), *C. sternbergi*, *C. jankowskii quelpartianus*, *C. fruhstorferi* (=error for *Damaster jankowskii quelpartianus*)

Zool. Soc. Kor. (1968) made a list of Korean carabids which mostly after Cho's (1957, 1963b) as: *Calosoma denticolle* (=error for *Charmosta lugens*), *C. maderae* (=error for *Campalita chinense*), *C. maximoviczi* (sic), *C. sycophanta* (=error for *Calosoma inquisitor cyanescens*), *Carabus dehaani* (sic, =error for *C. fiduciarus*), *C. insulicola* (=error for *C. sternbergi*), *C. japonicus* (=error for *C. sternbergi*), *C. albrechti* (=error for *C. sternbergi touzalini*), *C. fiduciarus gisellae* (= *C. fiduciarus saishutoicus*), *C. canaliculatus*, *C. pseudokoreanus*, *C. koreanus*, *C. kulzeri* (= *Leptocarabus gossareii kulzeri*), *C. opaculus* (=error for *Tomocarabus fraterculus*), *C. procerulus* (apparently error), *C. semiopacus*, *C. seishinensis*, *C. venustus* (= *Lipaster wulffiusi*), *C. venustus opacipennis* (= *L. wulffiusi opacipennis*), *C. venustus wulffiusi* (= *L. wulffiusi wulffiusi*), *C. hummeli tristicula*, *C. aurocinctus*, *C. conciliator*, *C. conciliator faldermanni*, *C. arvensis hokkaidensis* (=error for *C. conciliator faldermanni*), *C. billbergi pumila*, *C. manifestus chicanus* (= *C. sternbergi*), *C. sternbergi*, *C. sternbergi lauschanensis* (apparently error), *C. laeillei inshanica* (sic), *C. latreillei mandschurensis*, *C. latreillei semicoriaceus*, *C. van-volxemi* (=error for *Lipaster wulffiusi opacipennis*), *C. granulatus telluris* (=error for *C. granulatus ussuriensis*), *C. granulatus yezoensis* (=error for *C. granulatus ussuriensis*), *C. clathratus maacki*, *C. auratus* (apparently error), *C. truncaticollis* (=error for *C. billbergi*), *C. tuberculosus*, *C. mac-leayi*, *C. mac-leayi corensis* (sic), *C. fraterculus*, *C. kruberi*, *C. brandti* (apparently error), *C. infantulus* (apparently error), *C. septemcarinatus* (=error for *Leptocarabus koreanus*), *C. schrencki*, *C. constricticollis*, *C. rugipennis* (apparently error), *C. jankowskii*, *C. jankowskii fusanus*, *C. jankowskii quelpartianus*, *C. fruhstorferi* (=error for *Damaster jankowskii*), *C. smaragdinus longipennis* (= *D. smaragdinus fulminifer*), *C. smaragdinus manchuricus* (= *D. smaragdinus fulminifer*), *C. smaragdinus monilifer*, *C. smaragdinus pinganensis* (= *D. smaragdinus fulminifer*), *C. smaragdinus fulminifer*, and *C. smaragdinus branicki* (sic). Among them, the following abroad species which were mostly due to the intentional error must be eliminated from Korean carabid fauna: *Carabus procerulus*, *C. sternbergi lauschanensis*, *C. auratus*, *C. brandti*, *C. infantulus*, and *C. rugipennis*.

Cho (1969) illustrated and revised the following 27 Korean carabids: *Calosoma maderae* (=error for *Campalita chinense*), *C. denticolle* (=error for *Charmosta lugens*), *C. maximoviczi* (sic), *C. sycophanta* (=error for *C. inquisitor cyanescens*), *Carabus tuberculatus* (= *Hemicarabus tuberculatus*), *C. hummeli* (=error for *Megodontus vietinghoffi*), *C. vietinghoffi*, *C. truncaticollis* (=error for *C. billbergi*), *C. clathratus maacki*, *C. granulatus telluris* (=error for *C. granulatus ussuriensis*), *C. conciliator*, *C. procerulus* (apparently error), *C. fiduciarus kirinicus* (partim), *C. wulffiusi*, *C. fraterculus*, *C. kruberi*, *C. japonicus* (=error for *C. sternbergi*), *C. canaliculatus* (partim), *C. canaliculatus careniger* (=error for *Leptocarabus koreanus*), *C. dehaani* (sic, apparently error), *C. auratus* (apparently error), *C. pseudokoreanus*, *C. semiopacus*, *C. constricticollis*, *C. smaragdinus*, *C. jankowskii* (sic), and *C. (Damaster) rugipennis* (apparently error). Among them, *Carabus procerulus*, *C. dehaani* (sic), *C. auratus*, and *C. rugipennis* are not occurred in Korea in reality and thus must be excluded from the domestic fauna. Hyun et Woo (1969) recorded 2 species from Mt. Chirisan: *Carabus albrechti* (=error for *C. sternbergi*), and *C. fruhstorferi* (sic, = error for *Damaster jankowskii*). They (1970) also recorded *Carabus insulicola* (=error for *C. sternbergi*) from the mountain shortly later. Kim et al. (1969) recorded *Carabus procerulus* (=error for *Damaster smaragdinus*), and Choi (1969) recorded *Carabus jankowskii* (=error for *D. smaragdinus*) from Iss. Ch'ujagundo respectively. Seok (1970) listed 4 species in treating the insects from Is. Chejudo: *Carabus albrechti* (=error for *C. sternbergi touzalini*), *C. dehaani* (sic, =error for *C. fiduciarus saishutoicus*), *C. tuberculatus* (= *C. tuberculosus*), and *Coptolabrus monilifer* (= *Damaster smaragdinus monilifer*). Tamanuki (1970) illustrated 6 Korean carabids in his work: *Acoptolabrus schrencki*, *Coptolabrus jankowskii*, *quelpartianus*, *Coptolabrus jankowskii*, *Procrustes vietinghoffi*

*caesareus* (= *M. vietinghoffi borealis* subsp. nov.), *Coptolabrus smaragdinus fulminifer*, and *Acoptolabrus constricticollis*. Kim et Kim (1971) recorded *Carabus smaragdinus* from Mt. Sogŭngang, and *C. tuberculosus* from Mt. Odaesan, respectively. Komiya (1971) reported 7 species from Is. Chejudo: *Apotomopterus dehaanii* (=error for *Carabus fiduciarius saishutoicus*), *Calosoma maximowiczi*, *Campalita chinense*, *Carabus granulatus* (=error for *Hemicarabus tuberculosus*), *C. procerulus* (=error for *Damaster smaragdinus monilifer*), and *Damaster fruhstorferi* (=error for *D. jankowskii quelpartianus*). Kim et Kim (1972a) recorded *Carabus wulffiusi* (=error for *Leptocarabus seishinensis*), *C. japonicus* (=error for *C. sternbergi*), *C. smaragdinus* and *C. jankowskii* (sic) from Muju Kuch'ondong. They (1972b) also recorded *Carabus jankowskii* (sic) from Mt. Taedusan, Haenam. Tamanuki (1972) recorded North Korea in the distribution of *Acoptolabrus schrencki* and *A. constricticollis*. Lafer (1973) cited Korea in the distribution of *Carabus* (*Tomocarabus*) *fraterculus*. Lee et Kwon (1974) recorded 3 species which collected from Is. Chejudo: *Carabus granulatus telluris* (=error for *Hemicarabus tuberculosus*), *C. constricticollis* (=error for *Damaster jankowskii quelpartianus*), and *Apotomopterus dehaanii* (=error for *Carabus fiduciarius saishutoicus*). Kim et Kim (1974) recorded *Carabus jankowskii* from Mt. Naejangsan. Breuning (1975) described *Carabus* (*Isiocarabus*) *fiduciarius longigor* (=error for *C. sternbergi sternbergi*) based on the female material from Hpoung-Syou-Ouen (=P'ungsuwŏn, GW). Kim et al. (1976) recorded *Carabus jankowskii* from Mt. Ch'iaksan. Kim et Nam (1977) recorded 3 species from Mt. Chogyesan: *Eucarabus sternbergi*, *Coptolabrus jankowskii*, and *C. smaragdinus*.

It was, however, not until Lee (1977) recognized substantially the Korean *Carabus* group that these beetles were correctly realized by Korean entomologists, he revised and rectified many mistakes of the previous records on *Carabus* group in Korea, furthermore he arranged and gave a reasonable list: *Isiocarabus fiduciarius gisellae* (= *Carabus fiduciarius saishutoicus*), *I. fiduciarius kirinikus*, *Eucarabus canaliculatus careniger*, *E. pseudokoreanus*, *E. koreanus*, *E. kulzeri* (= *Leptocarabus gossarei kulzeri*), *E. semiopacus*, *E. seishinensis*, *E. venustus venustus* (= *Lipaster wulffiusi wulffiusi*), *E. venustus opacipennis* (= *L. wulffiusi opacipennis*), *E. hummeli tristicula*, *E. aurocinctus*, *E. conciliator*, *E. maeander*, *E. billbergi pumila*, *E. manifestus chicuanus* (= *C. sternbergi*), *E. sternbergi*, *Trachycarabus latreillei inshanica* (sic), *T. latreillei mandschurensis*, *T. latreillei semicoriaceus*, *Carabus granulatus telluris* (= *C. granulatus ussuriensis*), *C. clathratus maacki*, *Hemicarabus tuberculosus*, *H. macleayi macleayi* (= *H. macleayi coreensis*), *H. macleayi coreensis*, *Tomocarabus fraterculus*, *Scambocarabus kruberi*, *Megodontus vietinghoffi moltrechti* (= *M. vietinghoffi borealis* subsp. nov.), *Acoptolabrus schrencki*, *A. constricticollis*, *A. leechi* (= *Damaster mirabilissimus*), *Coptolabrus jankowskii jankowskii*, *C. jankowskii fusanus* (partim), *C. jankowskii quelpartianus*, *C. smaragdinus monilifer*, *C. smaragdinus branickii* (partim), and *C. smaragdinus fulminifer*.

Nakane (1977a) recorded Korea in the distribution of *Calosoma maximowiczi*, *Campalita chinense*, *Carabus* (*Hemicarabus*) *tuberculosus*, *C. (s. str.) granulatus telluris* (=error for *C. granulatus ussuriensis*), *C. (Adelocarabus) semiopacus*, *C. (A.) seishinensis*, *Damaster jankowskii*, and *D. jankowskii quelpartianus*. He (1977b) also reported and noted 6 species from Is. Chejudo: *Calosoma maximowiczi*, *Hemicarabus tuberculosus*, *Carabus fiduciarius gisellae* (= *C. fiduciarius saishutoicus*), *C. sternbergi sternbergi* (=error for *C. sternbergi touzalini*), *Damaster smaragdinus monilifer*, and *D. jankowskii quelpartianus*. Kim (1978) arranged the domestic localities collectively of 8 carabids in his distribution atlas: *Campalita chinense*, *Calosoma morawitzi* (=error for *Charmosta lugens*), *Calosoma maximowiczi* (sic), *Calosoma inquisitor*, *Carabus sternbergi*, *Coptolabrus jankowskii*, *C. smaragdinus*, and *Hemicarabus tuberculosus*. Yoon et Nam (1979) recorded 6 carabids from Mt. Ch'ilgapsan or Mt. Kyeryongsan: *Calosoma maximowiczi*, *Coptolabrus jankowskii*, *C. smaragdinus branickii*, *E. sternbergi*, *E. semiopacus*, and *E. seishinensis*. Shin (1979) recorded *Carabus jankowskii* from Mts. Wŏlaksan and Chuhŭlsan. Ed. Dep. Hokuryukan (1979) included Korea in the distribution of 3 Japanese species: *Calosoma maximowiczi*, *Campalita*

*chinense*, and *Carabus tuberculosus*. Mandl (1979) recorded *Carabus smaragdinus pinganensis* (= *Damaster smaragdinus fulminifer*) from Utikongo (=Mt. Kūmgangsan). He (1980) also revised *Carabus canaliculatus* group from Korea, and described *C. canaliculatus pappianus* and *C. canaliculatus vojnitzi*. Kurosawa et Kudo (1980) described *Damaster (Coptolabrus) jankowskii kojensis* based on the material from Koje-do Is. (=Is. Kōjedo) and Nan-hae Is. (=Is. Namhaedo), Korea. Yasuda et Okajima (1980) illustrated and noted the following Korean carabids: *Damaster (Acoptolabrus) constricticollis grallatorius*, *D. (A.) leechi* (= *D. mirabilissimus*), *D. (Coptolabrus) jankowski* (sic), *D. (C.) smaragdinus fulminifer*, and *D. (C.) smaragdinus branicki* (sic). Yoon et Nam (1980) listed 7 carabids from Mt. Myōngjisan: *Carabus procerulus* (=error for *Leptocarabus seishinensis*), *Eucarabus seishinensis*, *E. venustus opacipennis* (= *Lipaster wulffiussi opacipennis*), *E. sternbergi*, *Acoptolabrus leechi* (= *Damaster mirabilissimus*), *Coptolabrus jankowskii*, and *C. smaragdinus branickii*. Sakaguti (1981) illustrated the following 6 Korean carabids in his colored work: *Damaster (Acoptolabrus) schrencki*, *D. (A.) leechi* (=error for *D. mirabilissimus*), *D. (A.) constricticollis*, *D. (Coptolabrus) smaragdinus*, *D. (C.) jankowskii jankowskii*, and *D. (C.) jankowskii quelpartianus* (partim, *D. jankowskii kojensis* partim). Lee et Kwon (1981) listed 2 species from Is. Ullūngdo: *Calosoma maximowiczii* and *C. inquisitor*. Kim et al. (1981) listed *Coptolabrus smaragdinus* as a potential predator for pine needle gall midges which are seriously destructive forest pests in Korea. Kim et Chang (1982) reported the following 5 species from Iss. Tōkchōk-kundo: *Carabus smaragdinus*, *C. conciliator* (=error for *C. sternbergi*), *Calosoma maderae* (=error for *Campalita chinense*), *C. denticolle* (=error for *Charmosta lugens*), and *C. maximowiczii*. Very recently, Deuve (1982) described *Carabus sternbergi cartereti* from Mt. Sōlaksan, and he also placed *C. (Isiocarabus) fiduciarius longigor* and *C. (Eucarabus) manifestus chicuanus* under the synonymy of *C. sternbergi sternbergi*. And it would be the latest work for the domestic fauna that Ishikawa et Deuve (1982) described *Damaster (Acoptolabrus) mirabilissimus* which previously had been known as *Acoptolabrus leechi* since Lee (1977) in Korea.

Consequently, prior to the present monograph, a total of 34 species have been known to represent correctly in Korea as discussed above.

#### GENERAL MORPHOLOGY

**HEAD:** The head usually moderate in proportion to the thorax, but sometimes variable in shape or trend. It may be rarely markedly stout or strikingly slender, thus macrocephalism or stenocephalism is present. The vertex is somewhat flat or slightly convex, sometimes is feebly transversely grooved or simple continuous posteriorly, laterally defined by the antennal ledges which are more or less carinate, and usually bears a pair of supraorbital setae. The clypeus is generally broad rectangular bearing with 2 or 4 setae, and 2 longitudinal grooves, or the frontal impressions, which are continuously concave to frons or anterior part of vertex and often extending to the level of middle of eyes, are present. The labrum is apt to emarginate roundly at its anterior margin or sometimes may be deeply cleft, bearing several setae. Its size may be often circumstantial, in the macrocephalic group it is disproportionately small whereas is always larger in the stenocephalic one. The mandibles are large and well developed, they may be short and broad, or slender, they often bear a retinaculum on either inner base, or sometimes bear a few sharp teeth on either distal incisor margin. Their dorsal surfaces are usually smooth or sometimes may be closely striate. Each outer base is more or less concave, forming a scrobe which is non-setiferous. The maxillae have an immovable hook at the apex of each lacinia which is slender and numerously setulose on inner side, on the other hand the galea is 2-segmented and is often well developed in tribe Cychrini. The maxillary palpi are 4-segmented, among them the apical one may be often strikingly dilated distally, especially more prominent in male than in female, or sometimes longitudinally

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broadly grooved dorsally. The labium is rather flat, often bears a median tooth which may be flat subtriangular, sometimes long spine-like or entirely absent on the mentum, where occasionally a pair of setae may be present. The labial palpi consist of 3 segments, the apical one resembles that of maxillary palpi, but the penultimate one bears 2 or more setae. The submentum may be thick convex or flat, often has a pair or more of gular setae on it, though occasionally entirely lacking. The compound eyes are generally hemispherical and often well protrudent beyond the lateral margins of head, or may be rarely not produced laterally and small in size.

The antennae are generally 11-segmented, filiform, the length is greatly variable, and is usually slightly longer in male than in female within the same species, the basal 4 segments are generally glabrous whereas the remainders are closely pubescent. The hairy segments may be simple in both sexes, or having ventral hairless depressed areas in male.

**THORAX:** The pronotum is quadrate or cordate in general shape, and bears one or several setae on either side which rarely entirely lacking, the lateral margins are narrowly defined to gradually raised, often may be roundly extending before middle to middle, the hind angles are obtuse to acutely protrudent, the basal foveae are often present, but variable in concavity, and the median line may be weakly to prominently carved, rarely it may be carinate posteriorly.

The pronotal hypomera are well developed, very rarely partially visible from above, and bordered by a distinct noto-pleural suture. The prosternum produces a broad process posteriorly of which apex is often more or less truncate, or turned upwards.

**WINGS:** The elytra are strongly hardened, somewhat ovoid to elongate, or oblong in shape, the sculpture is often prominent, the longitudinal intervals, if present, basically consist of 16 striae but may be greatly variable in shape or the number, homodynamic or heterodynamic; the 4th, 7th, and 11th striae are often interrupted by a series of setiferous pores or foveae, and thus forming the primary intervals which may be sometimes linearly carinate, segmented or tuberculate. Between the primary intervals, the median intervals are termed as secondaries, whereas each side intervals of the latter are termed as tertiaries, as the same manner quarternaries may be also present next to tertiaries. The lateral margins are narrow to wide, often bear a series of umbilicate tubercles on either inner side, occasionally the humeral serrations, the preapical emarginations, and the apical mucrones are present. The epipleura may be simple, or sometimes widely developed.

The hind wings are fully developed in certain primitive group, and 2m-cu cross veins enclose and make a small cell, oblongum, but most are greatly reduced into a small lobe. There are two basic degenerating tendencies, of which one is small and strikingly narrowed trend and the other is very small subtriangularly atrophied trend.

**LEGS:** The 3 pairs of legs are well developed, cursorial and adapted strikingly for walking and running, the hind legs are longer than remainders. The tarsi are always 5-segmented, and fore tarsi are often dilated in male. The outer apical spur of fore tibiae may be slightly displaced from the apex. The hind coxae are large, immovably fused to metasternum, and often bear fundamentally 3 setae on either ventral surface; the chaetotaxy may be rather typical in distribution, the anterior, the posterior, and the postero-proximal one, although the presence may be variable by species or by taxa of the supraspecific level, it shows certain relationships among them bearing a considerable taxonomic importance. The hind trochanters are smooth, rarely bear a setiferous pore on either ventral surface.

**ABDOMEN:** The abdomen consists of generally 6 visible sterna and 8 tergites. The first visible sternum divided by the hind coxae and the median remnant may be rudimental or obsolete. The proximal 3 sterna are rather connate whereas the remainders sometimes bear a distinct transverse sulci near to each anterior margin.

**MALE GENITALIA:** The aedeagus is generally large, somewhat arcuate cylindrical, it generally locates within the pygofer, when not in use, rather clockwise 90°-turned state thus the apex may be directed left side in dorsal view; the aedeagal shaft is highly chitinized and simple smooth, but may be rarely carinate on distal part of the ventral side, distal dorsally it has membraneous

field and a median orifice which termed as ostium: the ostium sometimes may be lobate or wrinkled at its basal area, or preostium. The apex of the aedeagus or end piece, is broad to slender or often compressed. The endophallus is membraneous and inserted into the shaft when not in function, it bears a ligula which sometimes extraordinarily developed into a tongue-like lobe or prominent process, or entirely rudimental at the base of the dorsal wall. The copulatory piece, which is a strikingly sclerotized process with variously shaped, may be present or entirely absent on the dorsal wall situated at least a short distance farther from the base than the ligula, and this shows a great diversity in size and shape and differs by the species or subspecies. The parameres are generally long and flat, bearing a short to slender end piece.

**FEMALE GENITALIA:** The gonapophyses are generally well developed and somewhat shovel-shaped, they have a prominent setiferous pore on each apex and furnishing numerous sensory setae on either inner side. The vagina is membraneous and usually wrinkled, it is continuous to the bursa copulatrix which may be greatly developed to poorly stretched, the epivaginal sclerite is often present on the base of dorsal wall. The vaginal apophysis is rather diversified and somewhat characteristic by the supraspecific level; it consists of 3 plates, the inner, the vertical, and the outer one. The vaginal appendix which opens just back of the former inner plate may be rarely developed, and is correlated in size and shape, when present, with the male copulatory piece of the same species or subspecies. The spermatheca is generally thread-like tubular.

**LARVAE:** The larvae are generally elongate and somewhat compressed dorso-ventrally, campodeiform in shape. The head is moderate in size, usually is not wider than remainder of the body. The labrum is always not developed. The clypeus is often flat up to the membraneous part of the antennal insertions, not intervened by the edges of tentorium. The apical margin of the epistoma may be sometimes rostriform, serrate or quadridentate. The antennae are very short and not exceeding prothorax.

The abdomen consists of 9 visible segments, and the 10th segment is transformed into a pygopod. The urogomphi are often well developed.

## CHECK LIST OF KOREAN CARABINAE

### Subfamily CARABINAE Erichson, 1837

#### Tribe I. CARABINI Erichson, 1837

##### Subtribe CALOSOMINA Lapouge, 1927

##### Genus 1. *Calosoma* Weber, 1801

1. *Calosoma maximowiczii* (Morawitz, 1863)
2. *Calosoma inquisitor* (Linnaeus, 1758)
- 2-1. *Calosoma inquisitor cyanescens* Motschulsky, 1859

##### Genus 2. *Charmosta* Motschulsky, 1865

3. *Charmosta lugens* (Chaudoir, 1869)

##### Genus 3. *Campalita* Motschulsky, 1865

4. *Campalita chinense* (Kirby, 1818)

##### Subtribe CARABINA Erichson, 1837

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Group SPINULATI Ishikawa, 1978

Genus 4. *Apotomopterus* Hope, 1838

Subgenus *Linnocarabus* Géhin, 1876

5. *Apotomopterus* (*Linnocarabus*) *clathratus* (Linnaeus, 1761)

5-1. *Apotomopterus* (*Linnocarabus*) *clathratus maacki* (Morawitz, 1862)

Group CARABOGENICI Lapouge, 1930

Genus 5. *Carabus* Linnaeus, 1758

Subgenus *Carabus* Linnaeus, 1758

6. *Carabus* (*Carabus*) *granulatus* Linnaeus, 1758.

6-1. *Carabus* (*Carabus*) *granulatus ussuriensis* Born, 1914

Subgenus *Allocarabus* Lapouge, 1921

7. *Carabus* (*Allocarabus*) *aurocinctus* Motschulsky, 1846

Subgenus *Eutelocarabus* Géhin, 1876

8. *Carabus* (*Eutelocarabus*) *conciliator* Fischer, 1822

8-1. *Carabus* (*Eutelocarabus*) *conciliator faldermanni* Dejean et Boisduval, 1829

Subgenus *Isiocarabus* Reitter, 1896

9. *Carabus* (*Isiocarabus*) *fiduciarius* Thomson, 1856

9-1. *Carabus* (*Isiocarabus*) *fiduciarius kirinicus* Csiki, 1927

9-2. *Carabus* (*Isiocarabus*) *fiduciarius saishutoicus* Csiki, 1927

Subgenus *Parhomopterus* Lapouge, 1930

10. *Carabus* (*Parhomopterus*) *sternbergi* Roeschke, 1898

10-1. *Carabus* (*Parhomopterus*) *sternbergi angustus* Roeschke, 1898

10-2. *Carabus* (*Parhomopterus*) *sternbergi huchangensis* Kwon et Lee, subsp. nov.

10-3. *Carabus* (*Parhomopterus*) *sternbergi touzalini* Lapouge, 1911

10-4. *Carabus* (*Parhomopterus*) *sternbergi honamensis* Kwon et Lee, subsp. nov.

10-5. *Carabus* (*Parhomopterus*) *sternbergi sternbergi* Roeschke, 1898

10-6. *Carabus* (*Parhomopterus*) *sternbergi kojedoensis* Kwon et Lee, subsp. nov.

10-7. *Carabus* (*Parhomopterus*) *sternbergi palgongsanensis* Kwon et Lee, subsp. nov.

10-8. *Carabus* (*Parhomopterus*) *sternbergi tongdosanus* Kwon et Lee, subsp. nov.

10-9. *Carabus* (*Parhomopterus*) *sternbergi chrisanensis* Kwon et Lee, subsp. nov.

10-10. *Carabus* (*Parhomopterus*) *sternbergi sobaeksanensis* Kwon et Lee, subsp. nov.

10-11. *Carabus* (*Parhomopterus*) *sternbergi cartereti* Deuve, 1982.

11. *Carabus* (*Parhomopterus*) *namhaedoensis* Kwon et Lee, sp. nov.

Subgenus *Orientocarabus* Kwon et Lee, subgen. nov.

12. *Carabus (Orientocarabus) billbergi* Mannerheim, 1827.

12-1. *Carabus (Orientocarabus) billbergi pumilus* Kraatz, 1886

Genus 6. *Lipaster* Motschulsky, 1865

Subgenus *Morphocarabus* Géhin, 1876

13. *Lipaster (Morphocarabus) hummeli* (Fischer, 1824)

13-1. *Lipaster (Morphocarabus) hummeli tristiculus* (Kraatz, 1878)

Subgenus *Leptinocarabus* Reitter, 1895

14. *Lipaster (Leptinocarabus) wulffi* (Morawitz, 1862)

14-1. *Lipaster (Leptinocarabus) wulffi wulffi* (Morawitz, 1862)

14-2. *Lipaster (Leptinocarabus) wulffi ssangnamensis* Kwon et Lee, subsp. nov.

14-3. *Lipaster (Leptinocarabus) wulffi alpinus* Kwon et Lee, subsp. nov.

14-4. *Lipaster (Leptinocarabus) wulffi opacipennis* (Reitter, 1895)

Subgenus *Lyperocarabus* Lapouge, 1930

15. *Lipaster (Lyperocarabus) latreillei* (Fischer, 1822)

15-1. *Lipaster (Lyperocarabus) latreillei inchanicus* (Lapouge, 1916)

15-2. *Lipaster (Lyperocarabus) latreillei mandschurensis* (Breuning, 1926)

15-3. *Lipaster (Lyperocarabus) latreillei semicoriaceus* (Kraatz, 1881)

Group MULTISTRIATI Reitter, 1896

Genus 7. *Leptocarabus* Géhin, 1885

Subgenus *Aulonocarabus* Reitter, 1896

16. *Leptocarabus (Aulonocarabus) canaliculatus* (Adams, 1812)

16-1. *Leptocarabus (Aulonocarabus) canaliculatus careniger* (Chaudoir, 1863)

16-2. *Leptocarabus (Aulonocarabus) canaliculatus vojnitsi* (Mandl, 1980)

16-3. *Leptocarabus (Aulonocarabus) canaliculatus pappianus* (Mandl, 1980)

17. *Leptocarabus (Aulonocarabus) vogti* (Beheim et Breuning, 1943)

18. *Leptocarabus (Aulonocarabus) pseudokoreanus* (Breuning, 1932)

19. *Leptocarabus (Aulonocarabus) kwanmobongensis* Kwon et Lee, sp. nov.

Subgenus *Weolseocarabus* Kwon et Lee, subgen. nov.

20. *Leptocarabus (Weolseocarabus) koreanus* (Reitter, 1895)

20-1. *Leptocarabus (Weolseocarabus) koreanus weolseoe* Kwon et Lee, subsp. nov.

20-2. *Leptocarabus (Weolseocarabus) koreanus koreanus* (Reitter, 1895)

20-3. *Leptocarabus (Weolseocarabus) koreanus minor* Kwon et Lee, subsp. nov.

Subgenus *Adelocarabus* Reitter, 1896

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- 21. *Leptocarabus* (*Adelocarabus*) *semiopacus* (Reitter, 1895)
- 22. *Leptocarabus* (*Adelocarabus*) *seishinensis* Lapouge, 1931
- 22-1. *Leptocarabus* (*Adelocarabus*) *seishinensis seishinensis* Lapouge, 1931
- 22-2. *Leptocarabus* (*Adelocarabus*) *seishinensis seunglaki* Kwon et Lee, subsp. nov.
- 23. *Leptocarabus* (*Adelocarabus*) *vogtianus* (Beheim et Breuning, 1943)
- 24. *Leptocarabus* (*Adelocarabus*) *gossare* (Haury, 1879)
- 24-1. *Leptocarabus* (*Adelocarabus*) *gossare kulzeri* (Breuning, 1932)

Genus 8. *Hemicarabus* Géhin, 1876

Subgenus *Hemicarabus* Géhin, 1876

- 25. *Hemicarabus* (*Hemicarabus*) *tuberculosis* (Dejean et Boisdual, 1829)
- 26. *Hemicarabus* (*Hemicarabus*) *macleayi* (Dejean, 1826)
- 26-1. *Hemicarabus* (*Hemicarabus*) *macleayi coreensis* (Breuning, 1933)

Subgenus *Homoeocarabus* Reitter, 1896

- 27. *Hemicarabus* (*Homoeocarabus*) *maeander* (Fischer, 1822)
- 27-1. *Hemicarabus* (*Homoeocarabus*) *maeander quelpartensis* Kwon et Lee, subsp. nov.

Genus 9. *Scambocarabus* Reitter, 1896

- 28. *Scambocarabus* *kruberi* (Fischer, 1822)
- 28-1. *Scambocarabus* *kruberi kruberi* (Fischer, 1822)
- 28-2. *Scambocarabus* *kruberi hallasanensis* Kwon et Lee, subsp. nov.

Genus 10. *Tomocarabus* Reitter, 1896

- 29. *Tomocarabus* *fraterculus* (Reitter, 1895)
- 29-1. *Tomocarabus* *fraterculus fraterculus* (Reitter, 1895)
- 29-2. *Tomocarabus* *fraterculus affinis* Kwon et Lee, subsp. nov.
- 29-3. *Tomocarabus* *fraterculus yeongsiki* Kwon et Lee, subsp. nov.
- 29-4. *Tomocarabus* *fraterculus assimilis* Kwon et Lee, subsp. nov.

Genus 11. *Megodontus* Solier, 1848

Subgenus *Nabicarabus* Kwon et Lee, subgen. nov.

- 30. *Megodontus* (*Nabicarabus*) *vietinghoffi* (Adams, 1812)
- 30-1. *Megodontus* (*Nabicarabus*) *vietinghoffi borealis* Kwon et Lee, subgen. nov.

Genus 12. *Damaster* Kollar, 1836

Subgenus *Acoptolabrus* Morawitz, 1886

- 31. *Damaster* (*Acoptolabrus*) *schrencki* (Ménétrières, 1860)
- 32. *Damaster* (*Acoptolabrus*) *seonhyeongae* Kwon et Lee, sp. nov.

Subgenus *Koreacoptolabrus* Kwon et Lee, subgen. nov.

33. *Damaster* (*Koreacoptolabrus*) *constricticollis* (Kraatz, 1886)  
 33-1. *Damaster* (*Koreacoptolabrus*) *constricticollis constricticollis* (Kraatz, 1886)  
 33-2. *Damaster* (*Koreacoptolabrus*) *constricticollis chiricola* Kwon et Lee, subsp. nov.  
 34. *Damaster* (*Koreacoptolabrus*) *mirabilissimus* Ishikawa et Deuve, 1982

Subgenus *Coptolabrus* Solier, 1848

35. *Damaster* (*Coptolabrus*) *jankowskii* (Oberthür, 1885)  
 35-1. *Damaster* (*Coptolabrus*) *jankowskii jankowskii* (Oberthür, 1885)  
 35-2. *Damaster* (*Coptolabrus*) *jankowskii kangwonensis* Kwon et Lee, subsp. nov.  
 35-3. *Damaster* (*Coptolabrus*) *jankowskii kojensis* Kurosawa et Kudo, 1980  
 35-4. *Damaster* (*Coptolabrus*) *jankowskii quelpartianus* (Hauser, 1932)  
 35-5. *Damaster* (*Coptolabrus*) *jankowskii elegans* Kwon et Lee, subsp. nov.  
 35-6. *Damaster* (*Coptolabrus*) *jankowskii fusanus* (Born, 1907)  
 36. *Damaster* (*Coptolabrus*) *smaragdinus* (Fischer, 1824)  
 36-1. *Damaster* (*Coptolabrus*) *smaragdinus monilifer* (Tatum, 1847)  
 36-2. *Damaster* (*Coptolabrus*) *smaragdinus fulmifer* (Roeschke, 1916)  
 36-3. *Damaster* (*Coptolabrus*) *smaragdinus sangjaei* Kwon et Lee, subsp. nov.  
 36-4. *Damaster* (*Coptolabrus*) *smaragdinus hongdoensis* Kwon et Lee, subsp. nov.  
 36-5. *Damaster* (*Coptolabrus*) *smaragdinus hoenggandoensis* Kwon et Lee, subsp. nov.  
 36-6. *Damaster* (*Coptolabrus*) *smaragdinus branickii* (Taczanowski, 1888)

Tribe II. CYCHRINI Lacordaire, 1854

Genus 13. *Cychnus* Fabricius, 1794

37. *Cychnus coreicus* Breuning, 1950

## SYSTEMATICS

### Key to tribes of Korean Carabinae

1. Hind coxal cavities contiguous. Labrum broad, with anterior margin emarginate, but not deeply cleft. Elytral epipleura simply developed . . . . . Carabini  
 —. Hind coxal cavities distinctly separated. Labrum generally narrow, with anterior margin deeply cleft. Elytral epipleura strikingly wide, mostly enveloping hind body . . . Cychnini

Tribe I. *Carabini* Erichson, 1837 딱정벌레 - 두

**Diagnosis:** Body size generally variable, small to very large. Coloring black or rarely dark brown, often with metallic luster or mat.

Head stout or elongate, variable in shape, sometimes macrocephalism or stenocephalism present. Mandibles short stout or slender, with dorsal surface smooth or closely striate. Labrum broad, emarginate anteriorly, but not cleft deeply. Labium with a median tooth on mentum

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obtuse to rarely strikingly produced; labial palpi with penultimate segments bisetose or multisetose. Gular setae present or entirely absent. Eyes usually prominent, spherical, well protruding laterally or scarcely bulging from head. Neck short stout or slender.

Antennae with 2nd and 3rd segments more or less cylindrical or compressed and carinate at inner margins; hairy segments simple in both sexes, or with ventral hairless areas in male.

Pronotum monosetose to multisetose on either side, or entirely absent; hind angles produced or undeveloped. Prosternal process somewhat flat, well produced, with apex more or less truncate.

Elytra ovoid to elongate, or suboblong, sculpture heterodyname or homodyname, with epipleura simply developed; subapical emarginations present or absent; mucrones present or absent. Hind wings sometimes well developed, but usually degenerated or atrophied. Fore tarsi in male usually much broader than those of female. Abdomen with transverse sulci present or absent.

Male aedeagus with a ligula prominently developed or entirely rudimental; copulatory piece prominent or absent. Parameres with end piece produced long or short.

Female genitalia with bursa copulatrix weakly defined to well developed. Vaginal apophysis with inner plate very narrow to strongly developed.

Key to subtribes of Korean Carabini

1. Mandibles generally closely striate on dorsal surface, toothed only basally. Antennae with 2nd segments short, about a third as long as 3rd segments, generally both strongly compressed, sharply carinate at inner margins. Male aedeagus with a ligula strikingly developed; copulatory piece entirely absent . . . . . Calosomina
- Mandibles usually smooth on dorsal surface. Antennae with 2nd segments slender, usually exceeding half as long as 3rd segments, generally both cylindrical or rarely compressed and more or less carinate at inner margins. Male aedeagus with a ligula usually rudimental, or rarely well developed; copulatory piece present or absent . . . . . Carabina

Subtribe **Calosomina** Lapouge, 1927 명주딱정벌레 아족

**Diagnosis:** Body small to large sized. Coloring black, often with metallic luster on dorsum.

Head small to medium, usually stout. Mandibles more or less long, generally closely striate on dorsal surface, toothed only at base. Labrum broad, emarginate anteriorly, but not deeply cleft. Labium with a median tooth on mentum obtuse to subtriangularly produced; labial palpi with penultimate segments always multisetose. A pair or more of gular setae present. Eyes usually prominent, well protruding laterally, spherical. Neck short and stout.

Antennae with 2nd segments short, about a third as long as 3rd segments, generally both strongly compressed, sharply carinate at inner margins; hairy segments simple in both sexes.

Pronotum monosetose to bisetose laterally, with lateral margins strongly convex mesally.

Elytra subquadrate oval, usually more or less produced apically, with or without striae regular, sculpture homodyname or heterodyname; mucrones not developed. Hindwings generally well developed. Abdomen with transverse sulci usually present.

Male aedeagus with a ligula strikingly developed. Endophallus usually short, without copulatory piece. Parameres with end piece slender.

Female genitalia with bursa copulatrix well developed. Vaginal apophysis with inner plate broad, larger than outer plate.

## Key to genera of Calosomina

1. Apical segments of maxillary palpi about as long as penultimate segments. Elytral striae generally regular, triploid and homodyname. Male aedeagus with a ligula simple lobate . . . . . *Calosoma*  
 —. Apical segments of maxillary palpi distinctly shorter than penultimate segments. Elytral striae usually irregular, heterodyname. Male aedeagus with a ligula more or less sharply hooked at apex . . . . . 2.
2. Pronotum with posterior lateral seta entirely absent on each hind angle. Hind trochanters with a setiferous pore . . . . . *Charmosta*  
 —. Pronotum with posterior lateral seta prominent on each hind angle. Hind trochanters without both pore and seta . . . . . *Campalita*

Genus 1. *Calosoma* Weber, 1801 명수딕 닝벌레 속

*Calosoma* Weber, 1801, Observ. Ent. 1:20.

Type-species: *Carabus sycophanta* Linnaeus, 1758

Type-locality: Europe.

*Callipara* Motschulsky, 1865, Bull. Soc. Nat. Mosc. 38(4):308.

Type-species: *Carabus sycophanta* Linnaeus, 1758

Type-locality: Europe.

*Syncalosoma* Breuning, 1927, Kol. Rundsch. 13:144.

Type-species: *Calosoma frigidum* Kirby, 1873

Type-locality: U.S.A.

**Diagnosis:** Both generally small to large sized. Coloring black, with often greenish metallic luster on mainly marginal areas of dorsum.

Head small, stout, narrow and somewhat flat anteriorly; frontal impressions deep, strong rugosely punctulate; vertex evenly continuous to frons, comparatively coarsely punctulate posteriorly. Mandibles closely striate on dorsal surface. Maxillary palpi with apical segments about as long as penultimate segments. Labium with a median tooth on mentum obtuse to broad subtriangular; labial palpi with penultimate segments always multisetose. A pair or more of gular setae present. Eyes generally prominent, well protruding laterally.

Antennae with 2nd segments short, about a third as long as 3rd segments, both generally strongly compressed, sharply carinate at inner margins; hairy segments somewhat cylindrical in both sexes, without ventral hairless areas.

Pronotum wider than long, roundly produced just before middle laterally, monosetose, posterior lateral seta entirely absent on each hind angle; lateral margins completely bordered up to hind angles, or evanescent posteriorly before hind angles; punctures denser on each side.

Elytra with intervals generally regular, triploid and homodyname; grooves somewhat linearly punctulate; foveae on primaries shallowly punctulate. Hind wings well developed.

Middle tibiae in male slightly arcuate, but more or less straight in female. Abdomen with transverse sulci usually prominent.

Male aedeagus with a ligula simple lobate, round obtusely terminated; endophallus short, without any chitinized copulatory piece.

Female genitalia with bursa copulatrix well developed. Vaginal apophysis with inner plate broad, larger than outer plate. Spermatheca extending basally.

Key to species of *Calosoma*

1. Pronotum with lateral margins completely bordered up to hind angles. Mentum of labium lacking setae. Male aedeagus with end piece somewhat short and stout. Larger species about 23-36mm in length . . . . . *Calosoma maximowiczii*
- Pronotum with lateral margins partially bordered, evanescent posteriorly in front of hind angles. Mentum of labium with a pair of setae. Male aedeagus with end piece rather long and slender. Smaller species about 18-25mm in length . . . *Calosoma inquisitor cyanescens*

1. *Calosoma maximowiczii* (Morawitz, 1863) 김정명주떡정벌레

*Carabus (Calosoma) Maximowiczii* Morawitz, 1863, Mem. Acad. Sci. St. Pet. (7). 6(3):20, pl. 1 (7).

*Calosoma mikado* Bates, 1873, Trans. Ent. Soc. Lond.: 235.

*Calosoma Taqueti* Lapouge, 1924, Misc. Ent. 28:41 (Ile Quelpart).

*Calosoma maximowiczii* (sic) + *C. M. var. Taqueti* (sic): Csiki, 1927, Col. Cat. 91:7 (Korea).

*Calosoma maximowiczii* var. *taqueti*: Breuning, 1927, Kol. Rundsch. 13: 177 (Ins. Quelpart).

*Calosoma (Callipara) maximowiczii taqueti*: Lapouge, 1931, Gen. Ins. 192:403 (Ile Quelpart).

*Calosoma maximowiczii* (sic): Mori et Cho, 1937, Journ. Chos. Nat. Hist. Soc. 22:57<sup>①-③</sup>.

*Calosoma maximowiczii* (sic) + *C. m. var. touzalini*: Wu, 1937, Cat. Ins. Sin. 3:33-34 (Korea).

*Calosoma maximowiczii* (sic): Hirayama, 1940, Col. Ill. Col.: 91, pl. 32(20) (Korea).

*Calosoma Maximowiczii*: Jeannel, 1940, Mem. Mus. Nat. Hist. Nat. n.s. 13(1):83, p.1.2 (5) (Coree et ile Quelpart).

*Calosoma maximowiczii* (sic) + *C. m. taqueti* (sic): Yano, 1941, Nipp. Koch. 4 (1): 15-16 (Corea).

*Calosoma maximowiczii*: Habu, 1950, Icon, Ins. Jap. ed. sec. ref.: 975, f. 2775 (Korea).

*Calosoma maximowiczii* (sic): Cho, 1955, Songgyunhakpo 2:216<sup>④</sup>.

*Calosoma maximowiczii*: Nakane et Iga, 1955, Col. Ill. Ins. Jap. Col.: 85, p. 1.30 (1) (Korea).

*Calosoma maximowiczii* (sic): Chq 1957, Hum. & Sci., Nat. Sci., Kor. Univ. 2:178 (Korea).

*Calosoma maximowiczii*: Kim, 1958, Journ. Appl. Zool. Soc. Kor. 1(1):90<sup>⑤</sup>.

*Calosoma maximowiczii*: Nakane, 1962, Ins. Jap. 2(3): 13-14, 75, pl. 1 (2) (Quelpart Is., Korea).

*Calosoma maximowiczii*: Nakane, 1963, Icon. Ins. Jap. Col. nat. ed. 2: 5, pl. 3(2) (Is. Chejudo, Korea).

*Calosoma maximowiczii*: Suda in Furukawa et al., 1965, Col. Encycl. Ins.: 516 (Korea).

*Calosoma maximowiczii* (sic): Cho, 1965, Comm. Thes. Sixt. Ann. Kor. Univ.: 184<sup>⑥</sup>.

*Calosoma maximowiczii*: Nakane et al., 1966, Comm. Ins. Jap. Col.: 43, pl.20(2) (Korea, Is. Chejudo).

*Calosoma maximowiczii*: Educ. Min., 1967, Rep. Acad. Surv. Mt. Seolak: 192<sup>⑦</sup>.

*Calosoma maximowiczii* (sic): Zool. Soc. Kor., 1968, Nom. An. Kor. 2: 97 (Korea).

*Calosoma maximowiczii* (sic): Cho, 1969, Ill. Encycl. Faun. & Flor. Kor. 10:123-124, pl.3(3) (C. Korea, Is. Chejudo).

*Calosoma maximowiczii*: Komiya, 1971, Res. Bull. Plant Prot. 14:60, 63<sup>⑧</sup>.

*Calosoma maximowiczii* + *C. m. taqueti*: Nakane, 1977a, Nat. & Ins. 12(7): 6 (Korea, Is. Chejudo).

*Calosoma maximowiczii*: Nakane, 1977b, Bull. Nat. Sci. Mus. Ser. A (Zool.) 3(4):241<sup>⑨</sup>.

*Calosoma maximowiczii* (sic): Kim, 1978, Distr. Atl. Ins. Kor. 2:18, p.1.6 (CA 03)<sup>①③⑦⑧⑩⑪</sup>.

*Calosoma maximowiczii* (sic): Yoon et Nam, 1979, Rep. Kor. Ass. Cons. Nat. 17:144<sup>⑫</sup>.

*Calosoma maximowiczii*: Ed. Dep. Hokuryukan, 1979, Ill. Ins. Jap. Stud. ed.: 340 (Korea).

*Calosoma maximowiczii*: Lee et Kwon, 1981, Rep. Kor. Ass. Cons. Nat. 19: 153<sup>17</sup>.

*Calosoma maximowiczii*: Kim et Chang, 1982, Gen. Rep. Nat. Cond. 1: 144<sup>18</sup>.

**Type-locality**: Japan (Hokkaido).

**Description**: General coloration polished black, often with weak greenish metallic luster on elytral margins.

Head somewhat flat dorsally; frontal impressions deep, nearly reaching middle of eyes, strongly rugose; vertex evenly continuous to frons, comparatively coarsely punctulate posteriorly. Maxillary palpi with apical segments very slightly extending distally, about as long as penultimate segments. Labium with mentum not setose; median tooth broad subtriangular; labial palpi with apical segments slightly extending distally, much shorter than penultimate segments (ratio, 1:1.4). A pair or more of gular setae present.

Antennae short, slightly exceeding shoulders of elytra; hairy segments dark rufous, without ventral hairless areas.

Pronotum wider than long (ratio, 1: 1.5), monosetose laterally, with lateral margins completely bordered up to hind angles; punctures more or less gradually denser laterally.

Elytra with humeral angles prominent, a little more produced apically in female than in male; intervals regular convex, triploid and homodyname, transversely striate; primaries with a series of 5 to 6 foveae which are small, sometimes very weakly greenish tinted. Hind wings fully developed, with veins typically stretching.

Hind tibiae in male much setose on inner side than in female. Chaetotaxy of hind coxae often bisetose, postero-proximal setae usually absent.

Male aedeagus simple, gently arcuate, with end piece short and stout, obtusely terminated apically. Ligula large, subtriangular, simple lobate, round obtusely terminated. Endophallus very short.

Female genitalia with bursa copulatrix well developed. Vaginal apophysis with inner plate laminately subquadrate, longer than wide; outer plate ovate, much smaller than inner plate.

**Length**: Male 23-26mm, female 26-30mm.

**Locality**: CB: : Mt. Songnisan.

CN : Mt. Ch'ilgapsan (=Mt. Chilgab<sup>19</sup>).

GB : Mt. P'alongsan, Is. Ullungdo<sup>3</sup> (=Dagelet Island<sup>4</sup>, Todong<sup>6</sup>, Ulreung Is.<sup>17</sup>).

GG : Mt. Aengmubong<sup>12</sup>, Mt. Ch'ŏnmasan, Mt. Myŏngjisan, Seoul<sup>2</sup>, Is. Sŏnmido<sup>16</sup>, Iss. Tŏkchŏkkundo (=Dukchok Islands<sup>5</sup>, Tokchokto<sup>11</sup>, Is. Oul<sup>13</sup>).

GN : Mt. Sinbulsan, Mt. Wŏnhyosan.

GW : Kangch'on, Mt. Sogŭmgang, Mt. Sŏlaksan<sup>15</sup> (=Chŏhangnyŏng<sup>7</sup>).

HN : Mt. Taedŏksan<sup>11</sup>.

JJ : Chungmun, Mt. Hallasan<sup>8</sup> (=Mt. Hanna<sup>9</sup>), Ōrimok<sup>13</sup>, Sŏgwip'o<sup>14</sup>.

**Distribution**: Korea, Japan (Hokkaido, Honshu, Kyushu, Shikoku), China (Manchuria, Shantung, Szechwan, Yunnan, Taiwan), U.S.S.R. (Maritime Territory).

**Remark**: Lapouge (1924) described *Calosoma Taqueti* (sic) based on the material from Is. Chejudo, but the authors could not find out any outstanding subspecific characters separating it from the population of Korean Peninsula Proper and that of Japan except only the coloration of elytral margins in being often hardly tinted with greenish metallic luster in the population of Is. Chejudo. Considering that these group retain fully developed hind wings and fly well in the forest with widely distributed in Far East Asia, it would be more reasonable that the population of Is. Chejudo must be treated with that of the mainland under the nominate one.

2. *Calosoma inquisitor* (Linnaeus, 1758) 참록색명주딱정벌레

*Carabus inquisitor* Linnaeus, 1758, Syst. Nat. 10ed. 1:414.

Type-locality: Europe.

The nominate subspecies is represented widely from Europe, North Africa to Asia Minor, and is separated from the following Far East Asiatic subspecies in being generally shorter body shape, in having male protarsi of which the 4th segment is also broadly extended and bearing hairy pads ventrally, and in having male aedeagus armed with rather shorter ligula.

2-1. *Calosoma inquisitor cyanescens* Motschulsky, 1859 풀색명주딱정벌레

*Calosoma cyanescens* Motschulsky, 1859, Bull. Soc. Imp. Nat. Mosc. 32(4):489.

*Calosoma denserugatum* Géhin, 1885, Cat. Car.: 58.

*Calosoma sycophanta* (nec Linnaeus): Mori et Cho, 1937, Journ. Chos. Nat. Hist. Soc. 22:57 ①-②.

*Calosoma sycophanta* (nec Linnaeus): Cho, 1957, Hum. & Sci., Nat. Sci. Kor. Univ. 2:178 (Korea).

*Calosoma sycophanta* (nec Linnaeus): Zool. Soc. Kor., 1968, Nom. An. Kor. 2:97 (Korea).

*Calosoma sycophanta* (nec Linnaeus): Cho, 1969, Ill. Encycl. Faun. & Flor. 10:124, pl.3 (4a, b) (N. & C. Korea, Is. Ullungdo) ③.

*Calosoma inquisitor* (sic): Kim, 1978, Distr. Atl. Ins. Kor. 2:19, pl.6 (CA 04) ①, ③, ④-⑦.

*Calosoma inquisitor*: Lee et Kwon, 1981, Rep. Kor. Ass. Cons. Nat. 19:153 ⑧.

Type-locality: U.S.S.R. (Maritime Territory).

**Description:** General coloration polished black, with greenish metallic luster on dorsum and stronger marginally; under surface tinted with greenish aeneous luster.

Head somewhat flat dorsally; frontal impressions deep, nearly reaching middle of eyes, strongly rugose; vertex evenly continuous to frons, moderately punctulate posteriorly. Eyes well protruding laterally. Mandibles closely striate dorsally. Maxillary palpi with apical segments obscurely extending distally, about as long as penultimate segments. Labium with mentum bisetose; median tooth very broad subtriangular; labial palpi with apical segments slightly wider distally, much shorter than penultimate segments (ratio, 1: 1.4 to 1.5). Gula generally bisetose.

Antennae short, a little exceeding shoulders of elytra; hairy segments dark rufous, without ventral hairless areas.

Pronotum a little exceeding 1.5 times as wide as long, monosetose laterally, with lateral margins partially bordered, evanescent posteriorly before hind angles; basal foveae more or less deep, narrow.

Elytra a little more produced apically in female than in male, shape as in the preceding species; intervals regular convex, triploid and homodyname, transversely striate; primaries with a series of several to 9 small foveae which are somewhat greenish metallic in tint. Hind wings well developed.

Middle tibiae in male gently arcuate, much setose on inner side than in female; hind tibiae in male also much setose than in female on inner side. Chaetotaxy of hind coxae usually trisetose; postero-proximal setae generally present.

Male aedeagus gently arcuate, with end piece long and somewhat slender, obtusely terminated apically. Ligula large, simple lobate, broadly terminated. Endophallus very short, without copulatory piece.

Female genitalia with bursa copulatrix well developed. Vaginal apophysis with outer plate relatively large, longer but narrower than inner plate.

Length: Male 18-22mm, female 21-24mm.

Locality: CB : Kyesan<sup>⑥</sup>.

GB : Mt. P'algongsan, Is. Ullungdo<sup>③</sup> (=Ulreung Is.<sup>⑧</sup>).

GG : Kwangnŭng<sup>④</sup>, Mt. Myŏngjisan, Mt. Pukhansan<sup>②</sup>, Is. Tŏkchŏkto<sup>⑤</sup>.

GN : Mt. Wŏnhyosan.

HB : Nanam<sup>①</sup>.

JJ : Ŏrimok<sup>⑦</sup>.

Distribution : Korea, Japan (Hokkaido, Honshu), China (Manchuria), U.S.S.R. (Maritime Territory).

Genus 2. *Charmosta* Motschulsky, 1865 북방명주딱정벌레 속

*Charmosta* Motschulsky, 1865, Bull. Soc. Nat. Mosc. 38(4):301.

Type-species: *Carabus investigator* Illiger, 1798

Type-locality: Germany.

Diagnosis: Body generally small to large sized. Coloring usually polished black, scarcely tinted with metallic luster.

Head small and stout, narrow and somewhat flat anteriorly; frontal impressions less deep, fine rugosely punctulate, hardly reaching middle of eyes; vertex transversely shallowly grooved to posterior margins of eyes, somewhat finely punctulate posteriorly. Mandibles closely striate on dorsal surface. Maxillary palpi with apical segments distinctly shorter than penultimate segments. Labium generally with a median tooth on mentum more or less sharp, bisetose; labial palpi with penultimate segments always multisetose. A pair or more of gular setae present. Eyes generally prominent, produced laterally.

Antennae with 2nd segments short, about a third as long as 3rd segments, both generally strongly compressed, sharply carinate at inner margins; hairy segments somewhat cylindrical in both sexes, without ventral hairless areas.

Pronotum wider than long, roundly produced before middle laterally, somewhat steeply narrowed posteriorly, monosetose, lacking posterior lateral seta on each hind angle; lateral margins completely bordered up to hind angles; punctures fine, sometimes weakly rugose peripherally.

Elytra with intervals generally irregular, pentaploid or heptaploid, heterodyname; foveae on primaries usually prominently punctulate. Hind wings well developed.

Middle tibiae very slightly arcuate in both sexes, armed with spurs comparatively long at apices. Hind tibiae rather straight in both sexes, having spurs relatively long at apices. Hind trochanters with a setiferous pore. Abdomen with transverse sulci usually prominent.

Male aedeagus slender, with a ligula sharply hooked at apex; endophallus short, without any chitinized copulatory piece.

Female genitalia with bursa copulatrix well developed. Vaginal apophysis with inner plate large, subquadrate; outer plate narrow. Spermatheca extending basally.

### 3. *Charmosta lugens* (Chaudoir, 1869) 북방명주딱정벌레

*Calosoma lugens* Chaudoir, 1869, Ann. Soc. Ent. Franc. 9:372.

*Calosoma irregularis* Reitter, 1902, Wien. Ent. Zeitg. 21:185.

*Calosoma denticolle* (nec Gebler): Mori et Cho, 1937, Journ. Chos. Nat. Hist. Soc. 22:58<sup>①-⑥</sup>.

*Calosoma denticolle* (nec Gebler): Cho, 1957, Hum. & Sci., Nat. Sci. Kor. Univ. 2:178 (Korea).

*Calosoma denticolle* (nec Gebler): Zool Soc. Kor., 1968, Nom. An. Kor. 2:96 (Korea).

*Calosoma denticolle* (nec Gebler): Cho, 1969, Ill. Encycl. Faun. & Flor. Kor. 10:123, p1.3 (2) (N. Korea).

*Calosoma morawitzi* (nec Gehin): Kim, 1978, Distr. Atl. Ins. Kor. 2:17, p1.6 (CA 02)<sup>①-⑩</sup>

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*Calosoma denticolle* (nec Gebler): Kim et Chang, 1982, Gen. Rep. Nat. Cond. 1:144<sup>⑪-⑫</sup>.

Type-locality: China (Manchuria).

Description: General coloration polished black, without any metallic luster on dorsum.

Head somewhat flat dorsally; frontal impressions less deep, hardly reaching middle of eyes, fine rugosely punctulate; vertex transversely shallowly grooved to posterior margins of eyes, somewhat finely punctulate posteriorly. Mandibles closely striate dorsally. Maxillary palpi with apical segments somewhat subtriangularly extending distally, distinctly shorter than penultimate segments (ratio, 1: 1.25). Labium with mentum bisetose; median tooth more or less sharp subtriangular; labial palpi with apical segments gently extending distally, much shorter than penultimate segments (ratio, 1: 1.5). A pair or more of gular setae present.

Antennae short, slightly exceeding shoulders of elytra; hairy segments dark rufous, without ventral hairless areas.

Pronotum about 1.5 to 1.6 times as wide as long, monosetose laterally, with lateral margins roundly produced before middle and somewhat steeply narrowed posteriorly; punctures rather fine, often weakly rugose peripherally.

Elytra a little more produced apically in female than in male; intervals generally irregular, pentaploid or hexaploid, heterodyname; primaries with a series of 11 to 17 foveae which usually tinted bronzy or aeneous luster. Hind wings fully developed, with veins typically stretching.

Middle tibiae very slightly arcuate in both sexes. Hind tibiae rather straight in both sexes. Spurs on apices of middle and hind tibiae slender, comparatively long. Chaetotaxy of hind coxae usually trisetose; postero-proximal setae generally present. Hind trochanters always with a setiferous pore.

Male aedeagus slender, gently arcuate, with end piece somewhat long and compressed, roundly terminated apically. Ligula large, slender apically, sharply hooked at apex. Endophallus broad and short, without copulatory piece.

Female genitalia with bursa copulatrix well developed. Vaginal apophysis with inner plate somewhat subquadrate, large; outer plate less than half as wide as inner plate.

Length: Male 22-24mm, female 26-29mm.

Locality: GG : Iss. Töckchökkundo (=Is. Mun'gap<sup>⑪</sup>, Is. Baekaa<sup>⑫</sup>).

HB : Ch'öngjin<sup>④</sup>, Hapsu<sup>③</sup>, Kyöngsöng<sup>①</sup>, Nanam<sup>②</sup>, Sinasan, Unggi<sup>⑦</sup>.

HN : Hyesanjin (=Hesanjin<sup>⑩</sup>), Hoesalli<sup>⑨</sup>, Pujön'gowön<sup>⑤</sup>, P'ungsan<sup>⑥</sup>, Samsu<sup>⑧</sup>.

Diagnosis: Korea, Japan (Honshu), China (Manchuria, Shansi, Shantung, Hopeh), Mongolia, U.S.S.R. (Maritime Territory).

Genus 3. *Campalita* Motschulsky, 1865 큰명주딱정벌레 속

*Campalita* Motschulsky, 1865, Bull. Soc. Nat. Mosc. 38 (4): 304.

Type-species: *Carabus maderae* Fabricius, 1775

Type-locality: Portugal (Is. Madeira).

*Cosmoplata* Motschulsky, 1865, Bull. Soc. Nat. Mosc. 38 (4): 304.

Type-species: *Calosoma aeneum* Motschulsky, 1859

Type-locality: China.

*Callistrata* Motschulsky, 1865, Bull. Soc. Nat. Mosc. 38 (4): 306.

Type-species: *Calosoma granulorum* Motschulsky, 1865

Type-locality: U.S.S.R. (Mts. Ural).

*Catasoma* Lapouge, 1929, Misc. Ent. 38:10.

Type-species: *Calosoma olivieri* Dejean, 1831

Type-locality: Iran (Bagdad).

*Eremosoma* Lapouge, 1929, Misc. Ent. 38:10.

Type-species: *Calosoma algericum* Génin, 1885

Type-locality: Algeria (Touggourt).

**Diagnosis:** Body generally medium to large sized. Coloring usually black, often mat or less polished, with copper metallic luster.

Head stout, narrow anteriorly; frontal impressions moderately deep, fine rugosely punctulate, almost reaching middle of eyes; vertex somewhat transversely concave to posterior margins of eyes, obscure mesally, with fine punctures dorsally. Mandibles closely striate on dorsal surface. Maxillary palpi with apical segments distinctly shorter than penultimate segments. Labium generally bisetose, with a median tooth on mentum more or less sharp; labial palpi with penultimate segments always multisetose. A pair or more of gular setae present. Eyes usually prominent, protruding laterally.

Antennae with 2nd segments short, about a third as long as 3rd segments, both generally strongly compressed, sharply carinate at inner margins; hairy segments somewhat cylindrical in both sexes, without ventral hairless areas.

Pronotum wider than long, roundly produced near middle laterally, somewhat straightly narrowed posteriorly, generally bisetose, with posterior lateral seta present on each hind angle; lateral margins completely bordered up to hind angles; punctures fine, often weakly rugose basally; foveae broadly deep.

Elytra with intervals generally irregular, granulate or scaly, somewhat oblong and often subparallel-sided; foveae on primaries large circular, prominently punctulate. Hind wings well developed.

Middle and hind tibiae in male strikingly arcuate. Hind trochanters smooth, without any setiferous pore. Abdomen with transverse sulci generally prominent.

Male aedeagus with ligula large and broad, more or less sharply hooked apically; endophallus short, without any chitinized copulatory piece.

Female genitalia with bursa copulatrix well developed. Vaginal apophysis with inner plate broad, larger than outer plate. Spermatheca well extending basally.

#### 4. *Campalita chinense* (Kirby, 1818) 큰명주딱정벌레 (명주딱정벌레)

*Calosoma chinense* Kirby, 1818, Trans. Linn. Soc. Lond. 12:379.

*Calosoma aeneum* Motschulsky, 1859, Bull. Soc. Nat. Mosc. 38(4):489.

*Calosoma chinense*: Kolbe, 1886, Arch. f. Nat. 52:170<sup>①</sup>.

*Calosoma chinense*: Lapouge, 1911, Misc. Ent. 19(1): 2 (ile Quelpart).

*Calosoma ogumae* Matsumura, 1911, Journ. Coll. Agr. Toh. Univ. 4:109.

*Calosoma chinense* (sic): Kano, 1923, Ins. World. 27 (315): 384<sup>②-③</sup>.

*Calosoma chinense*: Kano, 1924, Ibid. 28 (326): 348 (Korea).

*Calosoma* (*Charmosta*) *Maderae* var. *chinense*: Csiki, 1927, Col. Cat. 91: 18 (Korea).

*Calosoma maderae* f. *chinense*: Matsumura, 1931, 6000 Ill. Ins. Jap.: 106 (Korea).

*Calosoma maderae* (nec Fabricius): Masaki, 1936, Kontyu. 10(5):265<sup>④</sup>.

*Calosoma maderae* (nec Fabricius): Mori et Cho, 1937, Journ. Chos. Nat. Hist. Soc. 22:58<sup>②-③, ⑤-⑩</sup>.

*Calosoma maderae* (nec Fabricius): Mochizuki et Tsunekawa, 1937, Ibid. 22:76<sup>⑪</sup>.

*Calosoma* (*Charmosta*) *maderae* var. *chinense*: Wu, 1937, Cat. Ins. Sin. 3: 35 (Korea).

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- Calosoma maderae* (nec Fabricius): Mochizuki et Masui, 1939, Sci. Rep. Keit. 4:53<sup>12</sup>.  
*Calosoma maderae chinense*: Hirayama, 1940, Col. Ill. Col.: 14, p1.7 (5) (Korea).  
*Calosoma maderae* (nec Fabricius): Ishii, 1940, Sci. Rep. Keit. 5:40<sup>12-13</sup>.  
*Campalita chinense*: Jeannel, 1940, Mem. Mus. Nat. Hist. Nat. n.s. 13(1): 116, p1.4 (7) (Korea).  
*Calosoma maderae* (nec Fabricius) + *C.m. chinensis* (sic): Yano, 1941, Nipp. Koch. 4(1):16<sup>13-15</sup>.  
*Calosoma maderae* var. *chinense*: Yokoyama, 1950, Icon. Ins. Jap. ed. sec. ref.: 974, f. 2744.  
 (Korea).  
*Campalita chinense*: Nakane et Iga, 1955, Col. Ill. Ins. Jap. Col.: 85, pl.30(3) (Korea).  
*Calosoma maderae* var. *chinese* (sic): Cho, 1957, Hum. & Sci., Nat. Sci. Kor. Univ. 2:178  
 (Korea).  
*Campalita chinense*: Nakane, 1962, Ins. Jap. 2(3): 16-17, 75-76, p1.1 (5) (Korea).  
*Campalita chinense*: Nakane, 1963, Icon. Ins. Jap. Col. nat. ed. 2:5, pl. 3(5) (Korea).  
*Campalita chinense*: Suda in Furugawa et al., 1965, Col. Encycl. Ins.: 516 (Korea).  
*Campalita chinense*: Nakane et al., 1966, Comm. Ins. Jap. Col.: 43, pl. 20(1) (Korea).  
*Calosoma maderae* (nec Fabricius): Zool Soc. Kor., 1968, Nom. An. Kor. 2:96 (Korea).  
*Calosoma maderae* (nec Fabricius): Cho, 1969, Ill. Encycl. Faun. & Flor. Kor. 10:122-123, pl.  
 3 (1) (N. & C. Korea).  
*Campalita chinense*: Komiya, 1971, Res. Bull. Plant Prot. 14:60, 63<sup>16</sup>.  
*Campalita chinense*: Nakane, 1977a, Nat. & Ins. 12(7):6(Korea).  
*Campalita chinense*: Ed. Dep. Hokuryukan, 1979, Ill. Ins. Jap. Stud. ed.: 341 (Korea).  
*Campalita chinense*: Kim, 1978, Distr. Atl. Ins. Kor. 2:16, pl. 6 (CA 01)<sup>2-9, 12-13, 17-20</sup>.  
*Calosoma maderae* (nec Fabricius): Kim et Chang, 1982, Gen. Rep. Nat. Cond. 1:144<sup>27</sup>.

Type-locality: China.

**Description:** General coloration: less polished black, with aeneous or coppery luster on dorsum.

Head somewhat flat dorsally; frontal impressions moderately deep, nearly reaching middle of eyes, fine rugosely punctulate; vertex somewhat transversely concave to posterior margins of eyes, obscure mesally, with fine punctures. Mandibles closely striate dorsally. Maxillary palpi with apical segments somewhat dilated subtriangularly distally, distinctly shorter than penultimate segments (ratio, 1: 1.25). Labium with mentum bisetose; median tooth more or less sharp, subtriangular; labial palpi with apical segments gently extending distally, much shorter than penultimate segments (ratio, 1: 1.5). Gula usually bearing 2 pairs of setae.

Antennae short, slightly exceeding shoulders of elytra; hairy segments dark rufous, without ventral hairless areas.

Pronotum about 1.5 to 1.6 times as wide as long, bisetose laterally, with lateral margins roundly and obscurely obtusely produced near middle, and somewhat straightly narrowed posteriorly; punctures fine and dense, often weakly rugose basally; foveae broadly deep; hind angles broadly round, produced posteriorly.

Elytra relatively long, a little dilated laterally in female than in male; intervals generally irregular, granulate or scaly; primaries with a series of 10 to 15 large circular foveae which usually bearing golden coppery to greenish metallic luster. Hind wings fully developed, with veins typically stretching.

Middle and hind tibiae in male strikingly arcuate, more or less slightly arcuate in female. Chaetotaxy of hind coxae usually bisetose, lacking postero-proximal one. Hind trochanters always smooth, without any setiferous pore.

Male aedeagus gently arcuate, with end piece long, compressed and truncate obliquely; ligula large and relatively broad, more or less sharply hooked apically; endophallus short, without copulatory piece.

Female genitalia with bursa copulatrix well developed. Vaginal apophysis with inner plate

broad lobate, narrow posteriorly, roundly concave on each side anteriorly, larger than outer plate.

Length: Male 25-31mm, female 31-35mm.

Locality: CB : Choch'iwŏn.

CN : Mt. Kyeryongsan.

GB : Ch'up'ungnyŏng, Mt. P'alongsan.

GG : Mt. Aengmubong<sup>⑭</sup>, Mt. Ch'ŏnggyesan<sup>⑭</sup>, Mt. Ch'ŏnmasan<sup>⑬</sup>, Inch'on<sup>⑩</sup>,<sup>⑮</sup> Is. Kanghwado (=Tangsalli<sup>④</sup>), Koyang<sup>⑪</sup>, Kwangnŭng<sup>⑭</sup>, Seoul<sup>②</sup>(=Ahyŏndong, Anamdong<sup>⑮</sup>, Ch'ŏngnyangni<sup>⑪</sup>, Han'gang<sup>⑮</sup>, Keijo<sup>⑬</sup>, Mt. Namsan<sup>⑬</sup>, Seoul<sup>①</sup>, Uidong<sup>⑮</sup>, Yŏuido<sup>⑮</sup>), Suwon, Is. Taemuŭido<sup>⑮</sup>, Iss. Tŏkchŏkkundo<sup>⑮</sup>, (=Is. Mun'gap<sup>⑮</sup>), Tŏkgŭnni.

GN : Mt. Kajisan, Pusan<sup>⑨</sup>.

GW : Kangnŭng<sup>⑪</sup>, Kyŏngp'odae<sup>⑮</sup>, Pukp'yŏng<sup>⑮</sup>, Sokch'o<sup>⑮</sup>, Mt. Sŏlaksan.

HB : Ch'ŏngjin<sup>⑦</sup>, Mt. Kwanmobong<sup>⑥</sup>, Nanam,<sup>⑤</sup> Sinasan.

HH : Haeju<sup>⑧</sup>.

HN : Hyesanjin (=Hesanjin<sup>④</sup>), Pujollyong<sup>⑬</sup>.

JJ : Mt. Hallasan<sup>⑮</sup>.

JN : Kwangju<sup>⑮</sup>, Nŭngju<sup>⑮</sup>.

PB : Huch'ang<sup>⑬</sup>.

PN : P'yŏngyang<sup>③</sup>(=Heijo<sup>⑮</sup>).

Distribution: Korea, Japan (Hokkaido, Honshu, Kyushu, Shikoku), China (Whole part, Tibet, Manchuria), U.S.S.R. (Maritime Territory, Sachalin).

#### Subtribe *Carabina* Erichson, 1837      딱성벌레 아속

**Diagnosis:** Body variably sized, very small to quite large. Coloring black or rarely dark brown to dark rufous, often with metallic luster or mat.

Head variable in shape, stout or elongate, sometimes macrocephalism or stenocephalism present. Mandibles short or slender, with dorsalsurface usually smooth. Labrum broad, emarginate anteriorly, but not cleft deeply. Labium with a median tooth on mentum obtuse to rarely strikingly produced; labial palpi bisetose or multisetose. Gular setae absent or often a pair or more pairs present. Eyes usually prominent, spherical, well producing laterally or scarcely bulging from head. Neck short stout or elongate.

Antennae with 2nd segments slender, usually exceeding half as long as 3rd segments, more or less cylindrical or rarely compressed and carinate at inner margins; hairy segments simple in both sexes, or with ventral hairless areas in male.

Pronotum monosetose to multisetose on either side, or entirely absent; hind angles well produced or undeveloped.

Elytra ovoid to elongate, sculpture heterodyname or homodyname; subapical emarginations present or absent; mucrones present or absent. Hind wings retained or strikingly atrophied. Abdomen with transverse sulci prominent or obscure.

Male aedeagus with a ligula sometimes well developed, but usually entirely rudimental. Endophallus short to long, with or without copulatory piece. Right paramere with end piece usually much slender.

Female genitalia with bursa copulatrix weakly defined to well developed. Vaginal apophysis with inner plate very narrow to strongly developed.

Key to genera of Carabina

1. Male aedeagus with a ligula greatly degenerated or absent altogether on the base of endophallus; ostium simple or lobate ..... 2.  
 —. Male aedeagus with a ligula strikingly developed into a spine-like process on the base of endophallus; ostium simple, not lobate (group *Spinulati* Ishikawa, 1978) ... *Apotomopterus*
2. Ostium simple, not lobate. Endophallus often with a strikingly developed copulatory piece, or with the median portion partially sclerotized on dorsal wall, otherwise aggonoporial lobe well developed at dorsal apex (group *Carabogenici* Lapouge, 1930) ..... 3.  
 —. Ostium generally lobate at its basal area, very rarely simple. Endophallus without any copulatory piece or partial sclerotization, except the aggonoporial lobe which is sometimes well developed (group *Multistriati* Reitter, 1896) ..... 4.
3. Endophallus with a copulatory piece conspicuously well developed; dorsal wall without prominent longitudinal fold on each side ..... *Carabus*  
 —. Endophallus with a copulatory piece entirely absent; dorsal wall often with a pair of longitudinal folds, or with a conspicuous inflation basally. .... *Lipaster*
4. Mandible generally short and broad, with inner sides more or less straight except apices which are abruptly bent inwards and pointed ..... 5.  
 —. Mandibles generally long and narrow, gradually tapering to apices, with inner sides gently arcuate ..... 8.
5. Antennae with 2nd and 3rd segments more or less cylindrical, or obscurely compressed basally. Elytra with or without humeral serrations at lateral margins ..... 6.  
 —. Antennae with 2nd and 3rd segments broadly compressed basally, and carinate at inner sides. Elytra with humeral serrations at lateral margins ..... *Hemicarabus*
6. Apical segments of palpi strongly extending distally, especially in male; maxillary palpi with penultimate segments markedly small, apparently shorter than apical segments ..... 7.  
 —. Apical segments of palpi moderately extending distally; maxillary palpi with penultimate segments slender, about as long as or slightly exceeding apical segments ... *Leptocarabus*
7. Submentum markedly thickened transversely. Pronotum with hind angles not produced posteriorly ..... *Scambocarabus*  
 —. Submentum less thickened, or rather flat. Pronotum with hind angles well produced posteriorly ..... *Tomocarabus*
8. Labial palpi with penultimate segments multisetose. Neck moderate, not elongate ..... *Megodontus*  
 —. Labial palpi with penultimate segments usually bisetose, rarely multisetose then the neck strikingly elongate or slender ..... *Damaster*

Group *Spinulati* Ishikawa, 1978    누미딱살벌레 군

**Diagnosis:** Male aedeagus with ostium simple, not lobate at its basal area. Endophallus with a ligula strikingly well developed into a spine-like process which is heavily chitinized on the base of dorsal wall; copulatory piece entirely absent.

**Larvae:** Mandibles comparatively short and wide, with large retinacula.  
 Epistoma quadridentate or rostriform.

Genus 4. *Apotomopterus* Hope, 1838    누미딱살벌레 속

*Apotomopterus* Hope, 1838, Col. Man. 2:48.

Type-species: *Carabus prodigus* Erichson, 1834

Type-locality: China (Southern Part):

**Diagnosis:** Body shape variable, elongate oval to markedly slender, generally medium to large sized. Coloring black, often with metallic tinges on dorsum.

Head comparatively small to moderate; frontal impressions prominent; vertex usually with a pair of foveae often connected with frontal impressions. Mandibles usually short and broad, with inner margins more or less straight except apices which are abruptly bent inwards and pointed; dorsal surface usually smooth, often scattered with very fine punctures. Maxillary palpi moderate to slender, with apical segments shorter or about as long as penultimate segments. Labium moderately long to slender, with penultimate segments usually bisetose or sometimes multisetose; submentum moderately flat to rather convex, with a pair or more of gular setae. Eyes generally prominent, protruding laterally. Antennae variable, short to markedly slender, often exceeding half of elytra, with 2nd segments slightly exceeding half or rarely as long as half of 3rd segments, both more or less cylindrical, or obscurely compressed at base of 3rd; hairy segments simple in both sexes, without ventral hairless depressed areas in male.

Pronotum variable, broad to rather narrow; lateral margins usually bisetose, broad to narrowly defined; punctures fine, or somewhat rugose peripherally; basal foveae deep broad to shallow; hind angles subacute to obtusely protrudent.

Elytra oblong to markedly elongate, rather flat, with sculpture heterodyname to homodyname; secondary intervals present or absent; preapical emarginations deep to weak, more conspicuous in female; humeral serrations at lateral margins present or absent. Hind wings more or less retained or atrophied. Chaetotaxy of hind coxae trisetose or bisetose with postero-proximal setae generally present; anterior setae present or absent. Hind trochanters smooth, without any setiferous pore. Abdomen with transverse culci prominently carved. Male aedeagus often rather disproportionately smaller in size to its body. Endophallus short to very long, with ligula strikingly well developed at its dorsal base; copulatory piece entirely absent.

Female genitalia with bursa copulatrix strikingly extending anteriorly. Vaginal apophysis with outer plate usually broad; inner plate vestigial.

Subgenus *Limnocarabus* Géhin, 1876 한국비밀성벌에 아속

*Limnocarabus* Géhin, 1876, Cat. Col. car. trib. Car.: 15.

Type-species: *Carabus clathratus* Linnaeus, 1761.

Type-locality: Europe.

**Diagnosis:** Body rather flat, elongate oval, usually medium to large size. Coloring black, often with weak metallic tinges on dorsum.

Head comparatively small; frontal impressions usually deep prominent; vertex usually with a pair of foveae often connected with posterior portions of frontal impressions. Mandibles generally short and broad, with inner margins more or less straight except apices which are abruptly bent inwards and pointed; dorsal surface usually smooth, often scattered with very fine punctures. Maxillary palpi moderate, with apical segments about as long as penultimate segments. Labium moderate, with penultimate segments generally bisetose; submentum usually rather convex, bearing with a pair or more of gular setae. Eyes generally prominent, protruding laterally.

Antennae short, usually a little exceeding shoulders or elytra, with 2nd segments half as long as or slightly exceeding half of 3rd segments, both more or less cylindrical, or obscurely compressed at base of 3rd; hairy segments simple in both sexes, without ventral hairless depressed areas in male. Pronotum somewhat subquadrate, rather flat, wider than long; lateral margins

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generally bisetose, more or less broadly defined; basal foveae deep broad; hind angles obtusely protrudent.

Elytra markedly elongate to oblong, with sculpture triploid heterodyname; primary intervals shortly segmented; secondaries strongly carinate and keel-like; tertiaries very weakly costate or absent; preapical emarginations prominent; humeral serrations at lateral margins present or absent. Hind wings partly atrophied, with veins more or less traceable.

Chaetotaxy of hind coxae usually bisetose, with postero-proximal setae generally present; anterior setae usually absent. Hind trochanters smooth, without any setiferous pore.

Abdomen with transverse sulci prominently carved. Male aedeagus somewhat gently arcuate. Endophallus with a ligula strikingly well developed, generally spine-like at its dorsal base; copulatory piece entirely absent.

Female genitalia with bursa copulatrix strikingly extending anteriorly. Vaginal apophysis with vertical plate rather short; outer plate broad oval; inner plate vestigial, not developed.

5. *Apotomopterus (Limnocarabus) clathratus* (Linnaeus, 1761) 참 큰누비딱정벌레

*Carabus clathratus* Linnaeus, 1761, Syst. Nat. 12ed. 2:669.

Type-locality: Europe.

This species is widely distributed from Europe to Far East Asia, mainly inhabiting in the marshy area, lake, or riverside, and is separated into 8 or more subspecies. The nominate subspecies is represented in M. & E. Europe. The 2 Far East Asiatic subspecies are distinguished from the remainder by the elytral structure of which the lateral margins are smooth, without serrations at each shoulder, and the foveae of primary intervals are generally smaller and shallowly impressed.

As Nakane (1962, 1977a) already indicated out, *Carabus aquatilis* Bates, 1883 is a valid name for discriminating Japanese population from the following subspecies which occurring in Korean Peninsula, Manchuria and Ussuri. The authors examined and compared some material from north-eastern area of Honshu (Pref. Aomori, Yamakata, and Iwate respectively) where this ground beetle is endemic indeed in Japan, with the material from Northern Korean Peninsula and Harbin of Manchuria, all now deposited in the authors' collection. Besides the differences Nakane found, subsp. *aquatilis* is separated from subsp. *maacki* by the foveae of primary intervals on elytra in being more shallow and small, usually granulose equally with the surface and bearing less metallic tinges. But in the latter subspecies, the foveae is more large and deep, usually not granulose except apical and lateral parts or at most sparsely granulose, and bearing more or less greenish coppery to greenish aeneous luster.

So, Japanese population of this species must be treated as *Apotomopterus (Limnocarabus) clathratus aquatilis* (Bates, 1883) comb. nov., a valid subspecies based on the above character.

5-1. *Apotomopterus (Limnocarabus) clathratus maacki* (Morawitz, 1862)

큰누비딱정벌레 (누비딱정벌레, 왕 폭죽딱정벌레)

*Carabus Maacki* Morawitz, 1862, Bull. Acad. Sci. St. Pet. 4:191.

*Carabus (Carabus) Sect. Carabus clathratus maacki* n. *maacki*: Breuning, 1933, Best.-Tab. eur. Col. 106:553 ①-③.

*Carabus (Limnocarabus) aquatilis*: Yano, 1941, Nipp. Koch. 4(1):18 ②.

*Carabus clathratus maacki*: Cho, 1957, Hum. & Sci., Nat. Sci. Kor. Univ. 2:181 (Korea).

*Carabus clathratus maacki*: Cho, 1963b, Journ. Nat. Acad. Sci. Rep. Kor. Nat. Sci. Ser. 4:85 ④-⑦.

*Carabus clathartus maacki*: Zool. Soc. Kor., 1968, Nom. An. Kor. 2:98 (Korea).

*Carabus clathratus maacki*: Cho, 1969, Ill. Encycl. Faun. & Flor. 10:126-127, pl. 3 (9) (N. Korea).

*Apotomopterus (Limnocarabus) clathratus maacki*: Ishikawa, 1873, Bull. Nat. Sci. Mus. Tokyo. 16 (2):193, 202.

*Carabus clathratus maacki*: Lee, 1977, Kor. Journ. Ent. 7(2); 38<sup>(8-10)</sup>.

**Type-locality**: U.S.S.R. (East Siberia).

**Description**: General coloration black, with greenish coppery to greenish aeneous luster on depressed parts of elytra.

Head flat; frontal impressions deep prominent, usually connected with foveae of vertex posteriorly which are rather rugose; vertex polished, smooth or very finely punctulate anteriorly, more or less prominently punctulate and somewhat rugose posteriorly. Mandibles with dorsal surface smooth, often scattered with very fine punctures more or less sparsely. Maxillary palpi with apical segments slightly extending distally, about as long as penultimate segments. Labium with mentum generally lacking setae; median tooth short subtriangularly pointed; labial palpi with apical segments somewhat subtriangular, apparently shorter than penultimate segments (ratio, 1: 1.4). Submentum slightly convex mesally, bearing with a pair or more of gular setae.

Antennae short, usually a little exceeding shoulders of elytra; hairy segments dark rufous, without ventral hairless depressed areas in male.

Pronotum wider than long (ratio, 1: 0.7), widest middle to posterior angles, rather flat and polished; lateral margins bisetose, somewhat oblique roundly contracted anteriorly, distinctly sinuate posteriorly before hind angles; hind angles broad, but obtusely produced; basal foveae broad and deep.

Elytra oblong, broadest at apical third; primary intervals shortly segmented, bearing a series of 12 to 13 foveae which are more or less deeply impressed and often tinted with greenish coppery to greenish aeneous luster; secondaries highly linearly carinate, keel-like; tertiaries absent; surface numerously granulose except primary foveae; humeral serrations at lateral margins absent. Hind wings partially atrophied, with veins rather traceable.

Chaetotaxy of hind coxae trisetose; anterior setae absent. Abdomen with transverse sulci prominently carved.

Male aedeagus with end piece gently narrowed and roundly terminated; ostium with basal part simple. Endophallus with a ligula strikingly developed, long spine-like; copulatory piece entirely absent.

Female genitalia with bursa copulatrix strikingly extending anteriorly. Vaginal apophysis with outer plate somewhat oval, broad; inner plate not developed.

**Length**: Male 30-34mm, female 31-36mm.

**Locality**: HB : Ch'ŏngjin (=Cheong-Jin<sup>⑤</sup>, Chungzin<sup>⑤</sup>, Seishin<sup>②</sup>), Chuŭl (=Chuul<sup>④</sup>), Nanam<sup>⑦</sup>, Onp'o (=Ompo<sup>①</sup>, On-Bn: sic<sup>⑧</sup>), Pugŏ, Puryŏng (=Punyang<sup>⑥</sup>).

HN : Wŏnsan (=Weon-San<sup>⑩</sup>, Wŏnsan<sup>③</sup>).

**Distribution**: Korea, China (Manchuria), U.S.S.R. (Maritime Territory).

Group *Carabogenici* Lapouge, 1931 (sensu Ishikawa, 1978) 딱정벌레 군

**Diagnosis**: Male aedeagus with ostium simple, not lobate at its basal area. Endophallus with a ligula greatly degenerated into a small patch or a streak of pigmented granules, or absent altogether; copulatory piece or partial sclerotization often present on the median portion of dorsal wall.

**Larvae**: Mandibles long, narrow and gently arcuate, not so conspicuously tapering from each base, with retinacula small. Epistoma often with 2 smaller lateral teeth on each side or may be serrate, and with a distinct median tooth.

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Genus 5. *Carabus* Linnaeus, 1758      딱정벌레 속

*Carabus* Linnaeus, 1758, Syst. Nat. 10ed. 1:413.

Type-species: *Carabus granulatus* Linnaeus, 1758

Type-locality: Europe.

**Diagnosis:** Body generally small to large sized. Coloring black or rarely dark brown to dark rufous, often with metallic luster or mat.

Head small to stout; frontal impressions moderate to deep, rugose or finely punctulate, usually not exceeding middle of eyes; vertex more or less flat, evenly continuous to frons or somewhat transversely concave to posterior margins of eyes, punctures or somewhat rugosely sculptured. Mandibles generally short and broad, with inner margins more or less straight except apices which are abruptly bent inwards and pointed; dorsal surface usually smooth. Maxillary palpi with apical segments about as long as, or shorter than penultimate segments. Labium generally without setae, with a median tooth on mentum somewhat broad subtriangular; labial palpi with penultimate segments bisetose. A pair or more of gular setae present, or rarely entirely absent. Eyes usually prominent, protruding laterally.

Antennae with 2nd segments slender, usually exceeding half as long as 3rd segments, both more or less cylindrical, or obscurely compressed at base; hairy segments simple in both sexes, or with ventral hairless areas in male.

Pronotum wider than long, bisetose to multisetose laterally, with hind angles broad round to often obtusely well produced; lateral margins broad and gradually raised, or narrowly defined; punctures fine, often sparse, or rugose; basal foveae deep to obscure.

Elytra ovoid to elongate, with sculpture usually triploid, heterodyname or homodyname; preapical emarginations present or absent; humeral serrations at lateral margins generally absent. Hind wings retained or strikingly atrophied.

Hind coxae with postero-proximal setae present or absent. Hind trochanters smooth, without any setiferous pore. Abdomen with transverse sulci prominent or obscure.

Male aedeagus with a ligula greatly reduced to a patch or a streak of pigmented granules; copulatory piece conspicuously developed on dorsal wall of endophallus.

Female genitalia with bursa copulatrix strikingly well developed. Vaginal apophysis with inner plate somewhat round to ovoid, well developed. Vaginal appendix rudimental to strikingly developed.

Key to subgenera of *Carabus*

1. Hairy segments of antennae in male with ventral areas normally scattering numerous hairs ..... 2.  
— Hairy segments of antennae in male with ventral hairless areas more or less cut concavely ..... 3.
2. Elytra with secondary intervals strikingly linearly carinate ..... *Carabus*  
— Elytra with secondary intervals not linearly carinate, but with transverse striae ..... *Allocarabus*
3. Pronotum with 3 to 4 pairs of lateral setae ..... *Eutelocarabus*  
— Pronotum with at most 3 or 2 pairs of lateral setae ..... 4.
4. A pair or more of gular setae present ..... 5.  
— Gular setae entirely absent ..... *Isiocarabus*

5. Elytra with secondary and tertiary intervals nearly equally raised linearly. Pronotum with lateral margins rather narrow, gently but distinctly sinuate before hind angles. . . . . *Parhomopterus*  
 —. Elytra with tertiary intervals lower than secondaries, and having somewhat transverse striae. Pronotum with lateral margins rather broad, more or less gently rounded, or very slightly sinuate before hind angles posteriorly . . . . . *Orientocarabus* subgen. nov.

Subgenus *Carabus* Linnaeus, 1758      딱정벌레 아속

*Carabus* Linnaeus, 1758, Syst. Nat. 10ed. 1:413.

Type-species: *Carabus granulatus* Linnaeus, 1758

Type-locality: Europe.

**Diagnosis:** Body elongate to elongate oval, generally small to medium sized. Coloring black, often with coppery green or violaceous metallic tinges on dorsum.

Head small, more or less narrow anteriorly; frontal impressions prominent, often rugose, usually not exceeding middle of eyes; vertex somewhat flat, often rugose anteriorly, punctulate posteriorly. Mandibles generally stout and broad, with inner margins more or less straight except apices which are abruptly bent inwards and pointed; dorsal surface usually smooth. Maxillary palpi moderately long, with apical segments slightly shorter than or rarely about as long as penultimate segments. Labium generally without setae on mentum; median tooth shortly pointed; labial palpi with penultimate segments bisetose. Submentum moderately flat, generally with a pair of gular setae. Eyes well prominent, protruding laterally.

Antennae slender, usually reaching one-third to middle of elytra, or rarely exceeding middle, with 2nd segments about half as long as or slightly exceeding half of 3rd segments, both more or less cylindrical and 3rd segments slightly compressed at base; hairy segments simple in both sexes, without ventral hairless areas in male.

Pronotum wider than long, with 4 or 5 lateral setae; lateral margins broad and gradually raised; hind angles broad obtuse; punctures fine to rugose; foveae deep broad to narrow.

Elytra elongate to elongate oval, usually triploid heterodyname; apical emarginations prominent; primary intervals interrupted and forming a series of tubercles; secondaries usually linearly costate; tertiaries somewhat linearly costate or granulate. Hind wings retained or narrowly atrophied, with veins complete or partly degenerate.

Hine coxae with postero-proximal setae generally absent. Hind trochanters smooth, without any setiferous pore. Abdomen with transverse sulci prominent, interrupted mesally.

Male aedeagus roundly bent apically in lateral shape. Endophallus well developed; ligula generally reduced to a patch of pigmented granules; copulatory piece conspicuously well developed, connected with most of distal membranous area of dorsal wall, with apex somewhat spathe-like and well sclerotized; left basal lobe well developed.

Female genitalia with bursa copulatrix markedly developed. Vagina apophysis with inner plate somewhat round, cup-shaped, bearing sharply carinated irregular wrinkles; outer plate very narrow. Vaginal appendix small.

6. *Carabus (Carabus) granulatus* Linnaeus, 1758      참혹줄 딱정벌레

*Carabus granulatus* Linnaeus, 1758, Syst. Nat. 10ed. 1:413.

Type-locality: Europe.

This species is widely distributed in Palaearctic to Nearctic Regions and is divided into several

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subspecies. The nominate subspecies is represented from Central to North Europe, and is separated from the following subspecies by the general coloration of dorsum in being much shiny metallic tinges, and by the shape of copulatory piece in male aedeagus of which apex is more pointed. Since Breuning's huge monograph (1933), the following subspecies has been treated as a junior synonym of subsp. *telluris* Lewis, 1882 which is occurred in Honshu, Japan, but is separable from the latter by the copulatory piece more narrowly terminated. And the apex of copulatory piece in subsp. *yezoensis* Bates, 1883, is often broader and more abruptly narrowed to tip than that of the following one.

6-1. *Carabus (Carabus) granulatus ussuriensis* Born, 1914    흑줄딱정벌레 (흑쪽딱정벌레)

*Carabus granulatus ussuriensis* Born, 1914, Soc. Ent. 29:79.

*Carabus granulatus yezoensis* (nec Bates): Kano, 1930, Kontyū. 4(2): 128-130<sup>①</sup>.

*Carabus (Carabus Sect. Carabus) granulatus yezoensis* n. *telluris* (nec Lewis): Breuning, 1933, Best.-Tab. eur. Col. 106: 540-541<sup>②</sup>.

*Carabus granulatus* var. *yezoensis* (nec Bates): Cho, 1934, Journ. Chos. Nat. Hist. Soc. 17:84<sup>③</sup>.

*Carabus granulatus* ab. *dauricus*: Mochizuki, 1935, Rinsei. 2(4):33<sup>④</sup>.

*Carabus granulatus*: Yano, 1941, Nipp. Koch. 4(1):18<sup>⑤-⑦</sup>.

*Carabus granulatus telluris* (partim): Nakane et Iga, 1955, Col. Ill. Ins. Jap. Col.: 87, pl. 31 (26) (Korea).

*Carabus* (s. str.) *granulatus telluris* (partim) + *C. g. ussuriensis*: Nakane, 1962, Ins. Jap. 2(3):45, 47, 82, f. 43(C) (Korea).

*Carabus granulatus yezoensis* (nec Bates) + *C. g. telluris* (nec Lewis): Cho, 1963b, Journ. Nat. Acad. Sci. Rep. Kor. Nat. Sci. Ser. 4:84<sup>⑧-⑩</sup>.

*Carabus granulatus telluris* (nec Lewis) + *C. g. yezoensis* (nec Bates): Zool. Soc. Kor., 1968, Nom. An. Kor. 2:98 (Korea).

*Carabus granulatus telluris* (nec Lewis): Cho, 1969, Ill. Encycl. Faun. & Flor. 10:187, pl. 3 (10) (N. Korea).

*Carabus* (s. str.) *granulatus telluris* (partim): Nakane, 1977a, Nat. & Ins. 12(10):6 (North Korea).

*Carabus granulatus telluris* (nec Lewis): Lee, 1977, Kor. Journ. Ent. 7(2):38<sup>⑪</sup>.

**Type-locality:** U.S.S.R. (Maritime Territory: Ussuri).

**Description:** General coloration black, with dorsum bearing coppery metallic tinges except raised part of elytra.

Head flat, with fine punctures of irregular size and partly rugose dorsally; frontal impressions deep prominent anteriorly, usually not exceeding middle of eyes, often rugose posteriorly. Vertex obscurely concave transversely to posterior margins of eyes, somewhat interrupted mesally. Mandibles with dorsal surface smooth. Maxillary palpi with apical segments extending distally, somewhat subtriangular, slightly shorter than penultimate segments (ratio, 1: 1.1). Labium with mentum generally lacking setae; median tooth shortly pointed; labial palpi moderate, with apical segments somewhat subtriangular and apparently shorter than penultimate segments (ratio, 1: 1.4). A pair of gular setae present.

Antennae slender, usually reaching one-third to middle of elytra; hairy segments dark rufous, simple slender, without ventral hairless areas in both sexes.

Pronotum wider than long (ratio, 1: 0.72), with 4 or 5 pairs of lateral setae; lateral margins broad and more raised posteriorly, gently rounded anteriorly and gradually sinuate posteriorly before hind angles; hind angles broad, obtusely protrudent; basal foveae fairly deep; punctures prominent, partly subrugose.

Elytra elongate to elongate oval, broadest at apical third; primary intervals forming a row of

elongate tubercles, with a series of 11 to 18 small shallow foveae; secondaries linearly carinate; tertiaries often forming an obscure row of granules or evanescent, with surface numerous granules. Hind wings retained, about 3 times as long as wide, rather broadly terminated apically; veins complete.

Fore tibiae with upper apical corner obscurely terminated. Chaetotaxy of hind coxae generally bisetose, lacking postero-proximal setae.

Male aedeagus roundly bent apically in lateral shape, with end piece compressed and sharply carinate marginally; ostium smooth, without any lobe. Endophallus with left basal lobe well developed; ligula reduced to a small patch of pigmented granules; copulatory piece strikingly developed and connected with most of distal membranous area of dorsal wall, with apex somewhat spade-like and furnished with spinules on tip.

Female genitalia with bursa copulatrix markedly developed. Vaginal apophysis with inner plate somewhat round and cup-shaped, bearing irregularly carinated wrinkles; outer plate narrow elongate. Vaginal appendix very small, rather coriaceous.

**Length:** Male 20-22mm, female 22-25mm.

**Locality:** GG : Mt. Tobongsan (=Seoul Dobongsan<sup>⑧</sup>).

GW : Mt. Kūmgangsān (=Kumkangssan<sup>⑪</sup>).

HB : Ch'ōngjin (=Chungzin<sup>⑨</sup>, Port Seishin<sup>②</sup>, Seishin<sup>⑤</sup>), Chuūl (=Shuotsu<sup>⑦</sup>), Hapsu<sup>⑫</sup>, Hoeryōng (=Hoeryung<sup>⑩</sup>), Mt. Kwanmobong<sup>③</sup> (=Mt. Gwan-Mo-Bong<sup>⑬</sup>, Kwan-mo-san<sup>⑭</sup>), Kyōngwōn (=Kyungwon<sup>⑮</sup>), Nanam<sup>⑯</sup>, Onp'o<sup>①</sup>, P'osangdong (=Pojo-do<sup>⑥</sup>), Puryōng (=Punyung<sup>⑰</sup>).

HN : Pujōn'gowōn<sup>④</sup>.

PB : Huch'ang (=Fuchang<sup>⑬</sup>), Mt. Nangnimsan (=Nangrim-san<sup>⑮</sup>).

**Distribution:** Korea, China (Manchuria), U.S.S.R. (Maritime Territory).

Subgenus *Allocarabus* Lapouge, 1921      압록강맥징벌레 아속

*Allocarabus* Lapouge, 1921, Mis. Ent. 25:123.

Type-species: *Carabus aurocinctus* Motschulsky, 1846

Type-locality: U.S.S.R. (E. Siberia: Nertschinsk).

**Diagnosis:** Body elongate oval, generally very small to small sized. Coloring black, often with coppery green to coppery reddish luster on dorsum.

Head moderate, somewhat flat; frontal impressions deep, reaching anterior margins of eyes, convergent posteriorly; vertex somewhat coarsely punctulate, punctures of anterior middle portion fine. Mandibles short and broad, with inner margins more or less straight except apices which are abruptly bent inwards and pointed; dorsal surface usually smooth. Maxillary palpi moderately long, with apical segments slightly shorter than penultimate segments, gently extending distally. Labrum strikingly emarginate at anterior margin mesally. Labium generally without setae on mentum; Median tooth shortly pointed; labial palpi with penultimate segments usually bisetose or rarely trisetose. Submentum moderately flat, generally with a pair of gular setae. Eyes prominent, well protrudent laterally.

Antennae moderately long, with 2nd segments about half as long as or slightly exceeding half of 3rd segments, both more or less cylindrical, and 3rd segments slightly compressed at base; hairy segments simple in both sexes, without ventral hairless areas in male.

Pronotum wider than long, with 3 to 5 lateral setae; lateral margins fairly rounded, gently sinuate before hind angles, usually narrowly defined; hind angles short; foveae rather shallow.

Elytra elongate oval, strongly convex, with lateral margins somewhat broadly bordered;

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sculpture prominent, usually pentaploid heterodyname; between primary and secondary intervals a row of granules present; shoulders moderately protrudent, without humeral serrations; preapical emarginations generally absent.

Legs very slender; hindcoxae somewhat evenly setose on inner side. Abdomen with transverse sulci generally obscure or very weakly carved. Male aedeagus gently curved apically in lateral shape.

7. *Carabus (Allocarabus) aurocinctus* Motschulsky, 1846      압록강 딱정벌레 (압강딱정벌레, 압록강줄딱정벌레)

*Carabus aurocinctus* Motschulsky, 1846, Mem. sav. etr. St. Pet. 5:113, pl. 4 (11).

*Carabus Klugi* Mannerheim, 1849, Bull. Soc. Nat. Mosc. 22:228.

*Carabus aurocinctus*: Semenov, 1927, Rev. Russ. d'Ent. 20:231<sup>①</sup>.

*Carabus (Carabus Sect. Eucarabus) aurocinctus*: Breuning, 1932, Best.-Tab. eur. Col. 105: 302-304<sup>①-②</sup>.

*Carabus aurocinctus*: Yano, 1941, Nipp. Kocn. 4(1): 19<sup>③</sup>.

*Carabus aurocinctus*: Cho, 1957, Hum. & Sci., Nat. Sci. Kor. univ. 2:180 (Korea).

*Carabus aurocinctus*: Cho, 1963b, Journ. Nat. Acad. Sci. Rep. Kor. Nat. Sci. Ser. 4:83<sup>④-⑤</sup>.

*Carabus aurocinctus*: Zool. Soc. Kor., 1968, Nom. An. Kor. 2:97 (Korea).

*Eucarabus aurocinctus aurocinctus*: Lee, 1977, Kor. Journ. Ent. 7(2):37<sup>⑥-⑦</sup>.

**Type-locality:** U.S.S.R. (E. Siberia: Nertschinsk).

**Description:** General coloration black, with pronotum dark green to greenish metallic luster bearing gold reddish coppery tinges on lateral margins; elytra with dark rufous coppery luster, bearing golden reddish coppery tinges on lateral margins.

Head flat; frontal impressions deep prominent, reaching anterior margins of eyes, convergent posteriorly; vertex with somewhat fine punctures on anterior middle convex portion, rather deep and coarsely punctulate on the remainder. Mandibles with dorsal surface smooth, short and broad. Maxillary palpi with apical segments extending distally, slightly shorter than penultimate segments. Labium with mentum generally lacking setae; median tooth shortly pointed; labial palpi moderately long, with apical segments somewhat subtriangular, apparently shorter than penultimate segments. Submentum generally bearing a pair of gular setae.

Antennae moderately long, simple slender, without ventral hairless areas in both sexes.

Pronotum wider than long, with 3 to 5 lateral setae; median longitudinal line very weak; surface slightly convex, scattered with prominent punctures; lateral margins fairly rounded, gently sinuate before hind angles, rather narrowly defined and raised; hind angles short, broad subtriangularly margined; basal foveae rather shallower and round.

Elytra elongate oval, strongly convex, with lateral margins somewhat broadly bordered; sculpture prominent, usually pentaploid heterodyname, with all intervals interrupted frequently by the transverse striae; between primary and secondary intervals, a row of granules present; outside of the 3rd primaries only 3 intervals present.

Under surface polished black, very finely punctulate, bearing with somewhat greenish metallic tinges on both sides of thorax and epipleura. Abdomen with transverse sulci generally obscure.

Male aedeagus slender, gently curved apically in lateral shape, with end piece broad roundly terminated.

**Length:** Male 15-16mm, female 16-17mm.

**Locality:** HB : Ch'ŏngjin (=Cheong-Jin<sup>⑦</sup>, Chungzin<sup>④</sup>, Gebirge westlich von Seishin<sup>②</sup>), Mt. Mayisan (=Mt. Baji<sup>③</sup>).

PB : Basin of River Amnokkang (=Flussgebiet des Jalu<sup>①</sup>, Ap-Nog-Gang<sup>⑥</sup>),

Aprok-kang<sup>⑤</sup>).

**Distribution:** Korea, China (Manchuria), U.S.S.R. (Maritime Territory, E. Siberia).

Subgenus *Eutelocarabus* Géhin, 1876      백두산 딱정벌레 아속

*Eutelocarabus* Géhin, 1876, Cat. Col. car. trib. Car.: 14.

Type-species: *Carabus arcensis* Herbst, 1784

Type-locality: Europe (Poland).

**Diagnosis:** Body rather flat, elongate oval, generally small to medium sized. Coloring black, usually with various metallic luster or tinges on dorsum.

Head small to moderate, slightly narrow anteriorly; frontal impressions prominent, usually not exceeding middle of eyes; vertex very slightly convex to flat, punctures obscure to deeply sculptured, or partly rugose. Mandibles gently stout and broad, with apices abruptly bent inwards and pointed; dorsal surface simple, smooth or rarely with very fine micropunctures. Maxillary palpi moderately long, with apical segments about as long as or very slightly shorter than penultimate segments. Labium generally without setae on mentum, with median tooth shortly pointed; labial palpi moderate, with penultimate segments bisetose. Submentum moderately flat, generally with a pair of gular setae. Eyes prominent, protrudent well laterally.

Antennae comparatively short, usually not exceeding one-third of elytra, with 2nd segments about half as long as or slightly exceeding half of 3rd segments, both more or less cylindrical; 3rd segments slightly compressed at base; hairy segments always with ventral hairless areas in male.

Pronotum apparently wider than long, rather flat basally, with 3 to 4 pairs of lateral setae; lateral margins broad and slightly reflexed; hind angles broad, short roundly terminated; punctures fine to deep, sometimes rugose peripherally; basal foveae narrow and shallow.

Elytra elongate oval, generally triploid heterodyname; apical emarginations apparently obscure; primary intervals segmented and forming a series of tubercles; secondaries more costate than tertiaries or nearly equally convex, with fine or distinct transverse striae over whole surface. Hind wings partially atrophied, narrow.

Chaetotaxy of hind coxae trisetose, postero-proximal setae generally present. Hind trochanters smooth, without any setiferous pore. Abdomen with transverse sulci weakly to prominently carved, more or less obscure mesally.

Male aedeagus somewhat broad at middle portion. Endophallus long, with ligula generally reduced to a narrow patch of pigmented granules; copulatory piece conspicuously well developed, connected with most of distal membranous area of dorsal wall, somewhat Y-like carinate dorsally; left basal lobe well developed.

Female genitalia with bursa copulatrix well developed. Vaginal apophysis with inner plate somewhat round, dish or cup-shaped; outer plate narrow or large. Vaginal appendix small.

#### 8. *Carabus (Eutelocarabus) conciliator* Fischer, 1822      백두산 딱정벌레

*Carabus conciliator* Fischer, 1822, Ent. Imp. Russ. 1:202, pl. 10 (25).

Type-locality: U.S.S.R. (E. Siberia: Nertschinsk).

The nominate subspecies is represented from E.N. Siberia and N. Mongolia, and is separable from the following subspecies by the generally a little larger and broader body shape, and slightly more oval elytra. And subsp. *hokkaidensis* Lapouge, 1924 is also distinguishable from the following one by the shape of end piece of male aedeagus in being more gently terminated apically.

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8-1. *Carabus (Eutelocarabus) conciliator faldermanni* Dejean et Boisdual, 1829

검줄배두산딱정벌레 (황터만 딱정벌레, 팔터만 딱정벌레, 오대산 딱정벌레, 검줄딱정벌레)

*Carabus Faldermanni* Dejean et Boisdual, 1829, Icon. Col. d'Eur. 1:332, pl. 44 (3).

*Carabus viridilimbatus* Motschulsky, 1859, Bull. Soc. Nat. nosc. 38:489.

*Carabus (Carabus Sect. Eucarabus) arvensis conciliator m. faldermanni*:

Breuning, 1932, Best.-Tab. eur. Col. 105:404-404 <sup>①</sup>.

*Eutercia conciliator* (sic): Mochizuki, 1935, Rinsei. 2(4):33 <sup>②</sup>.

*Carabus conciliator* + *C. c. faldermanni* (sic): Cho, 1957, Hum. & Sci., Nat. Sci. Kor. Univ. 2:180 (Korea).

*Carabus (Eutelocarabus) conciliator*: Nakane, 1962, Ins. Jap. 2(3):43 (Korea).

*Carabus conciliator* + *C. c. faldermanni* + *C. c. hokkaidensis* (nec Lapouge): Cho, 1963b, Journ. Nat. Acad. Sci. Rep. Kor. Nat. Sci. Ser. 4:83 <sup>③-⑤</sup>.

*Carabus (Eutelocarabus) conciliator*: Nakane, 1963, Icon. Ins. Jap. Col. nat. ed. 2:5-6, pl. 3 (8a, b).

*Carabus conciliator* + *C. c. faldermanni* + *C. arvensis hokkaidensis* (nec Lapouge): Zool. Soc. Kor., 1968, Nom. An. Kor. 2:97 (Korea).

*Carabus conciliator*: Cho, 1969, Ill. Encycl. Faun. & Flor. Kor. 10:127-128, pl. 3 (11) (N. Korea).

*Carabus (Eutelocarabus) conciliator*: Ishikawa, 1973, Bull. Nat. Sci. Mus. Tokyo. 16(2): 207.

*Eucarabus conciliator faldermanni*: Lee, 1977, Kor. Journ. Ent. 7(2):38. <sup>⑦</sup>

Type-locality: U.S.S.R. (Maritime Territory: Dauria).

**Description:** General coloration black, with dorsum bearing greenish to violaceous metallic or sometimes coppery tinges and lateral sides more brilliant.

Head slightly narrow anteriorly, with fine punctures of irregular size; frontal impressions deep anteriorly, usually not exceeding middle of eyes, moderately rugose posteriorly. Vertex obscurely concave transversely to posterior margins of eyes. Mandibles with dorsal surface smooth. Maxillary palpi with apical segments subtriangularly extending distally, usually very slightly exceeding penultimate segments (ratio, 1: 0.95). Labium with mentum generally lacking setae; median tooth shortly pointed; labial palpi moderate, with apical segments more or less subtriangular and apparently shorter than penultimate segments (ratio, 1: 1.4). Submentum generally with a pair of gular setae.

Antennae comparatively short, not reaching one-third of elytra; hairy segments dark rufous, 6th to 9th segments with ventral hairless areas more or less cut concavely in male.

Pronotum apparently wider than long (ratio, 1: 0.7), with 3-4 pairs of lateral setae; lateral margins somewhat broad, gently rounded anteriorly and very slightly sinuate posteriorly before hind angles; hind angles broad, short roundly terminated; basal foveae shallow; punctures prominent, of irregular size, somewhat rugose peripherally.

Elytra elongate oval, broadest at middle to apical third; primary intervals segmented and forming a row of tubercles, with a series of 13 to 15 small shallow foveae; secondaries and tertiaries nearly equally convex and carinate, with distinct transverse striae over whole surface. Hind wings partially atrophied, narrow, with veins of anterior half more or less retaining.

Chaetotaxy of hind coxae generally trisetose, bearing postero-proximal setae. Male aedeagus weakly arcuate, with end piece gently narrowed to apex. Ostium comparatively smooth, without any lobes. Endophallus with left basal lobe well developed; ligula reduced to a small patch of pigmented granules; copulatory piece strikingly developed and connected with most of distal membranous area of dorsal wall, somewhat Y-like carinate dorsally, emarginated at right side, with apex broadly rounded.

Female genitalia with bursa copulatrix large, well developed. Vaginal apophysis with inner plate somewhat round dish or cup-shaped, strongly deep dorsally; outer plate a little larger than

inner plate, more or less oblong. Vaginal appendix small. Epivaginal sclerite small rhomboidal, with median carina prominent.

Length: Male 18-20mm, female 20-23mm.

Locality: GG : Seoul.

GW : Mt. Odaesan (=Otae-san<sup>⑥</sup>).

HB : Hoeryŏng (=Hoe-Ryeong<sup>⑦</sup>, Hoeryung<sup>⑤</sup>, Horjong<sup>①</sup>), Nanam (=Ranam<sup>④</sup>),  
Mt. Paektusan (=Paiktu-san<sup>③</sup>).

HN : Pujŏn'gowŏn<sup>②</sup>.

Distribution: Korea, China (Manchuria), U.S.S.R. (Maritime Territory).

Subgenus *Isiocarabus* Reitter, 1896 왕딱정벌레 아속

*Isiocarabus* Reitter, 1896, Best.-Tab. eur. Col. 34:170.

Type-species: *Carabus fiduciarius* Thomson, 1856

Type-locality: China (Northern part).

**Diagnosis:** Body generally medium to large sized, somewhat flat and elongate oval. Coloring black, often with greenish to bluish metallic luster on dorsum.

Head generally medium in relative size to the body; frontal impressions deep prominent, finely punctulate or somewhat rugose posteriorly, usually not exceeding middle of eyes; vertex more or less evenly flat; neck usually stout. Mandibles generally short and broad, with inner margins more or less straight except apices which are abruptly bent inwards and pointed; dorsal surface usually smooth, often scattered with sparse micropunctures. Maxillary palpi moderate, with apical segments about as long as or slightly shorter than penultimate segments. Labium generally without setae on mentum, with a median tooth short subtriangular; labial palpi moderate, with penultimate segments generally bisetose. Submentum always with gular setae absent. Eyes usually prominent, more or less protruding laterally.

Antennae usually not reaching middle of elytra, often slightly shorter in female, with 2nd segments usually exceeding half of 3rd segments, both more or less cylindrical, not compressed basally; hairy segments in male with ventral hairless areas.

Pronotum apparently wider than long, bisetose or rarely trisetose laterally, with hind angles broadly produced; lateral margins more or less broad, but well defined; punctures fine, usually dense; basal foveae broad.

Elytra ovoid to elongate oval, generally triploid homodyname, or rarely heterodyname; primary intervals somewhat regularly segmented; secondaries and tertiaries even linearly raised, or the latter less raised; preapical emarginations generally very obscure; humeral serrations at lateral margins absent. Hind wings elongately atrophied.

Chaetotaxy of hind coxae generally bisetose, with postero-proximal setae absent. Hind trochanters smooth, without any setiferous pore. Abdomen with transverse sulci generally prominent.

Male aedeagus with end piece long, narrowed apically; basal part of ostium simple, without any lobe. Endophallus with a ligula greatly reduced to a patch of pigmented granules; copulatory piece prominently developed, somewhat finger-like, on median portion of dorsal wall.

Female genitalia with bursa copulatrix strikingly developed and separated anteriorly. Vaginal apophysis with inner plate more or less round to ovoid, deeply concave longitudinally; outer plate oblong to elongate oval. Vaginal appendix not developed.

**Remark:** The present subgenus is very similar in general appearance to subgen. *Ohomopterus* Reitter, 1896, which is widely distributed and endemic in Japanese Archipelago. Indeed, some

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misidentification were made for this group previously in Korea, and most of those errors had been rectified and arranged by one of the author, Lee (1977). This subgenus is apparently separated from *Ohomopterus* by lacking gula setae and undeveloped female vaginal appendix.

9. *Carabus (Isiocarabus) fiduciarius* Thomson, 1856 참왕따정벌레

*Carabus fiduciarius* Thomson, 1856, Ann. Soc. Ent. Franc. 3(4):338, pl. 9(3).

Type-locality: China (Northern Part).

The nominate subspecies is represented from Eastern to Northern China. In Korea, the following 2 subspecies are occurred in the mainland and Is. Chejudo respectively.

Key to subspecies of *Carabus (Isiocarabus) fiduciarius*

1. Pronotum with greenish coppery to golden reddish coppery luster. Elytra greenish to greenish coppery luster, more bright at lateral margins. Male copulatory piece more stout. Body size a little larger ..... *Carabus (Isiocarabus) fiduciarius kirinicus*
- Pronotum and elytra generally black, with dark bluish to violet luster laterally. Male copulatory piece more slender. Body size a little smaller ..... *Carabus (Isiocarabus) fiduciarius saishutoicus*

9-1. *Carabus (Isiocarabus) fiduciarius kirinicus* Csiki, 1927

왕따정벌레 (금가슴왕따정벌레)

*Carabus fiduciarius*: Heyden, 1887, Hor. Soc. Ent. Ross. 21:246 (Korea).

*Carabus auricollis* Born, 1922, Ent. Mitt. 11(4): 174 (Korea). nom. Praeocc.

*Carabus insulicola* (nec Chaudoir): Kano, 1923, Ins. World. 27 (315): 384 (Korea).

*Carabus fiduciarius*: Kano, 1924, Ibid. 28 (386): 348 (Korea).

*Carabus (Carabus Sect. Ohomopterus) kirinicus* Csiki, 1927, Col. Cat. 91: 264 (Korea).

*Apotomopterus (Ohomopterus) dehaani striatus* (sic): Lapouge, 1931, Gen. Ins. 192: 673 (Corée)<sup>①</sup>.

*Carabus (Apotomopterus Sect. Isiocarabus) fiduciarius n. kirinicus*: Breuning, 1932, Best.-Tab. eur. Col. 104:241<sup>①-③</sup>.

*Carabus (Ohmopterus) kirinicus* (sic) + *C. (O.) dehaani* (sic et nec Chaudoir): Yano, 1941, Nipp. Koch. 4(1):19<sup>④</sup>.

*Carabus dehaanii* (nec Chaudoir): Habu, 1950, Icon, Inc. Jap. ed. sec. ref.: 972, f. 2766 (Korea).

*Carabus dehaani* (sic et nec Chaudoir) + *C. f. kirinicus*: Cho, 1957, Hum. & Sci., Nat. Sci. Kor. Univ. 2:178 (Korea).

*Carabus dehaani* (sic et nec Chaudoir): For. Exp. Stat., 1959, Handb. Kwangn. Exp. For.: 96<sup>⑤</sup>.

*Carabus dehaani* (sic et nec Chaudoir) + *C. f. kirinicus*: Cho, 1963b, Journ. Nat. Acad. Sci. Rep. Kor. Nat. Sci. Ser. 4:80<sup>③, ⑥-⑦</sup>.

*Carabus dehaani* (sic et nec Chaudoir): Zool. Soc. Kor., 1968, Nom. An. Kor. 2:97 (Korea).

*Isiocarabus fiduciarius kirinicus*: Lee, 1977, Kor. Journ. Ent. 7(2):37.<sup>⑧</sup>

Type-locality: Korea (Central part).

**Description:** General coloration black, with pronotum bearing greenish coppery to golden reddish coppery luster, and with elytra greenish to greenish coppery luster, more brilliant at lateral margins.

Head more or less stout posteriorly; frontal impressions deep prominent, not reaching middle of eyes, usually very finely punctulate and somewhat rugose posteriorly; vertex rather flat, nearly without transverse obscure grooves posteriorly, usually with very fine punctures anteriorly and somewhat rugose posteriorly. Mandibles with dorsal surface smooth, scattered with sparse microsculptures. Maxillary palpi with apical segments somewhat subtriangularly extending distally, about as long as or slightly shorter than penultimate segments. Labium with mentum generally lacking setae; median tooth short subtriangularly pointed; labial palpi with apical segments more or less subtriangular and apparently shorter than penultimate segments (ratio, 1: 1.24-1.3). Submentum always without gular setae.

Antennae moderate, often reaching one-third of elytra in male; hairy segments dark rufous, 5th to 7th segments with ventral hairless areas in male.

Pronotum apparently wider than long (ratio, 1: 0.68), somewhat rectangular, with 2 or rarely 3 pairs of lateral setae; lateral margins rather broad, but well defined, gently rounded anteriorly and slightly sinuate before hind angles; hind angles broad roundly produced; basal foveae somewhat shallow and broad; punctures dense and fine.

Elytra ovoid to elongate oval, broadest next to middle distally, triploid homodyname; primary intervals segmented by a series of 11 to 17 foveae, with outer primaries usually more frequently interrupted; secondaries and tertiaries even linearly raised; shoulders more or less broad, obtusely protrudent. Hind wings narrow elongately atrophied, with anterior several veins traceable. Chaetotaxy of hind coxae generally bisetose, lacking postero-proximal setae.

Male aedeagus slender, curved distally, with middle portion somewhat swollen; end piece gently narrowed and subacutely pointed. Endophallus long, with left basal lobe well developed; ligula reduced to a small patch of pigmented granules; copulatory piece more or less stout elongate; somewhat finger-like, produced on the median portion of dorsal wall.

Female genitalia with bursa copulatrix well developed and separated anteriorly. Vaginal apophysis with its vertical plate high; inner plate more or less round, deeply concave along vertical plate; outer plate more or less elongate oval; vaginal appendix not developed.

Length: Male 31-33mm, female 33-35mm.

Locality: GG : Kwangnŭng<sup>⑤</sup>, Tŏkchŏng? (=Tyek-syen<sup>⑥</sup>, Tyek-syeng<sup>①</sup>), Mt. Un'gilsan, Yangp'yŏng? (=Yang-ken<sup>⑦</sup>, Yang-kenn<sup>②</sup>).

GW : Mt. Ch'iaksan (=Mt. Chi-Ag<sup>⑧</sup>), P'ungsuwŏn (=Hpoung-Syen-Ouen<sup>③</sup>).

HB : Mt. Kwanmobong (=Mt. Kwanbo<sup>④</sup>).

Distribution: Korea (Peninsula proper).

## 9-2. *Carabus (Isiocarabus) fiduciarius saishutoicus* Csiki, 1927 세주왕 딱정벌레 (제주딱정벌레, 풀색왕딱정벌레)

*Carabus fiduciarius insularis* Lapouge, 1911, Misc. Ent. 19(1):4-5(Ile Quelpart) nom. praeocc.

*Carabus (Carabus Sect. Isiocarabus) fiduciarius* var. *saishutoicus* Csiki, 1927, Col. Cat. 91:265 (Ins. Quelpart).

*Morphocarabus (Isiocarabus) fiduciarius insularis* (partim): Lapouge, 1931, Gen. Ins. 192: 663 (Ile Quelpart).

*Carabus (Apotomopterus Sect. Isiocarabus) fiduciarius* n. *gisellae* (nec Csiki): Breuning, 1932, Best.-Tab. eur. Col. 104:240-241 (Insel Quelpart).

*Carabus (Isiocarabus) fiduciarius saishutoicus*: Yano, 1941, Nipp. Koch. 4(1): 19<sup>①</sup>.

*Carabus (Ohomopterus) dehaanii* (partim): Kurosa, 1949, Bull. Tak. Ins. 60:2 (Is. Chejudo).

*Carabus insulicola* (nec Chaudoir) + *C. fiduciarius gisellae* (nec Csiki): Cho, 1957, Hum. & Sci., Sci., Nat. Sci. Kor. Univ. 2:178 (Korea).

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- Carabus fiduciarius gisellae* (nec Csiki): Cho, 1963a, Hum. & Sci., Nat. Sci. Kor. Univ. 6:201 (Quelpart Island).  
*Carabus insulicola* (nec Chaudoir) + *C. fiduciarius gisellae* (nec Csiki): Cho, 1963b, Journ. Nat. Acad. Sci. Rep. Kor. Nat. Sci. Ser. 4:80-81 (Cheju-do).  
*Carabus fiduciarius gisellae* (nec Csiki): Cult. & Inf. Min., 1968, Rep. Acad. Surv. Mt. Hanlisan: 258<sup>②</sup>.  
*Carabus insulicola* (nec Chaudoir) + *C. fiduciarius gisellae* (nec Csiki): Zool. Soc. Kor., 1968, Nom. An. Kor. 2:97 (Korea).  
*Carabus fiduciarius kirinicus* (nec Csiki): Cho, 1969, Ill. Encycl. Faun. & Flor. Kor. 10:128-129, pl. 4 (13) (Is. Chejudo).  
*Carabus dehaani* (sic): Seok, 1970, Chej. Ch'ongs. 5:75-76 (Is. Chejudo).  
*Apotomopterus dehaanii* (nec Chaudoir): Komiya, 1971, Res. Bull. Plant Prot. 14:63 (Is. Chejudo).  
*Apotomopterus dehaanii* (nec Chaudoir): Lee et Kwon, 1974, Nat. & Lif. 4: 30<sup>③-④</sup>.  
*Isiocarabus fiduciarius gisellae* (nec Csiki): Lee, 1977, Kor. Journ. Ent. 7(2):37<sup>⑤-⑦</sup>.  
*Carabus fiduciarius gisellae* (nec Csiki): Nakane, 1977b, Bull. Nat. Sci. Mus. Ser. A (Zool.) 3(4): 241-242<sup>⑧-⑨</sup>.

**Type-locality:** Korea (Is. Chejudo).

**Description:** General coloration black, with dorsum dark bluish to violet luster laterally.

Head more or less stout posteriorly; frontal impressions deep prominent, not reaching middle of eyes, usually very finely punctulate and somewhat rugose posteriorly; vertex rather flat, almost without transverse obscure grooves posteriorly, usually with very fine punctures anteriorly and somewhat rugose posteriorly. Mandibles with dorsal surface smooth, with sparse microsculptures very obscure. Maxillary palpi with apical segments somewhat subtriangularly extending distally, about as long as penultimate segments. Labium with mentum generally lacking setae; median tooth short subtriangularly pointed; labial palpi with apical segments more or less subtriangular and apparently shorter than penultimate segments (ratio, 1: 1.3-1.4). Submentum always without gular setae.

Antennae moderate, in male often reaching one-third of elytra; hairy segments somewhat rufous, 5th to 7th segments with ventral hairless areas in male.

Pronotum wider than long (ratio, 1: 0.73), generally with 2 pairs of lateral setae; lateral margins comparatively well defined, more or less roundly contracted anteriorly, somewhat gently sinuate before hind angles; hind angles broad, short roundly produced; basal foveae very shallow; punctures very fine mesally, gently deeper peripherally.

Elytra ovoid to elongate oval, broadest next to middle distally, triploid homodyname; primary intervals segmented by a series of 11 to 17 foveae, with outer primaries often more frequently interrupted; secondaries and tertiaries even linearly costate; shoulders somewhat narrow basally, more or less obtusely protrudent. Hind wings narrow elongately atrophied, with anterior several veins traceable. Chaetotaxy of hind coxae generally bisetose, lacking postero-proximal setae.

Male aedeagus slender, curved distally, with middle portion somewhat swollen; end piece gently narrowed and subacute apically. Endophallus long, with left basal lobe well developed; ligula reduced to a small patch of pigmented granules; copulatory piece slender, somewhat finger-like.

Female genitalia with bursa copulatrix well developed and separated anteriorly. Vaginal apophysis with its vertical plate high; inner plate somewhat round, deeply concave along vertical plate; outer plate elongate oval; vaginal appendix not developed.

**Length:** Male 26-29mm, female 29-31mm.

**Locality:** JJ : Cheju (=Saishu-U<sup>⑧</sup>), Hagwi<sup>④</sup>, Mt. Hallasan (=Mt. Hal-La<sup>⑤</sup>, Mt. Hanlasan<sup>②</sup>, Mt. Hanna<sup>⑨</sup>), Sanch'öndan<sup>③</sup>, Sögwip'o (=Seo-Gui-Po<sup>⑦</sup>, Seikiho<sup>①</sup>), Söngp'anak (=Seong-Pan Ag<sup>⑥</sup>).

**Distribution:** Korea (Is. Chejudo).

**Remark:** The subspecific name, *Carabus (Isiocarabus) fiduciarius gisellae* Csiki, 1927, is that of North Chinese race (=for *Carabus striatus* Chaudoir, 1869: nom. praeocc.), not for the reception of the race of Is. Chejudo in reality.

Subgenus *Parhomopterus* Lapouge, 1930 우리따장벌레·아속

*Parhomopterus* Lapouge, 1930, Gen. Ins. 192:263.

Type-species: *Carabus sternbergi* Roeschke, 1898

Type-locality: Korea (Northeastern part).

**Diagnosis:** Body generally medium sized, somewhat flat and elongate oval to elongate. Coloring black, usually with greenish, bluish, or golden reddish coppery to various metallic luster on dorsum.

Head generally moderately stout; frontal impressions deep prominent, finely punctulate mesally and rather rugose posteriorly, rarely reaching middle of eyes; vertex more or less flat, punctures obscure to deep finely sculptured; neck more or less stout. Mandibles generally short and broad, with inner margins more or less straight except apices which are abruptly bent inwards and pointed; dorsal surface usually smooth, often scattered with sparse micropunctures. Maxillary palpi moderate, with apical segments about as long as or very slightly shorter than penultimate segments. Labium generally without setae on mentum, with a median tooth short subtriangular; labial palpi moderate, with penultimate segments generally bisetose. Submentum rather flat, with a pair or more of gular setae present. Eyes generally prominent, well protrudent laterally.

Antennae moderately long, usually reaching one-third of elytra in male, with 2nd segments usually exceeding half of 3rd segments, both more or less cylindrical; 3rd and 4th segments very slightly compressed basally; hairy segments in male with ventral hairless areas.

Pronotum generally wider than long, bisetose or trisetose laterally, with hind angles often small subtriangularly produced; lateral margins rather narrowly bordered.

Elytra ovoid to elongate oval, sculpture triploid or pentaploid, heterodyname or sometimes homodyname; primary intervals somewhat regularly segmented, secondaries and tertiaries ever linearly raised; quaternaries often present, but apparently narrower than the preceding two intervals; preapical emarginations generally very obscure; humeral serrations at lateral margins absent. Hind wings elongate subtriangularly atrophied. Chaetotaxy of hind coxae generally bisetose, with postero-proximal setae absent. Hind trochanters smooth, without any setiferous pore. Abdomen with transverse sulci weak but sharply carved, obscurely interrupted mesally.

Male aedeagus smooth or carinate ventrally, with basal area of ostium wrinkly swollen or simple at left side. Endophallus long, lobate basally, with a ligula greatly reduced to elongate, crescent, or small oval patch of pigmented granules; copulatory piece prominently developed.

Female genitalia with bursa copulatrix strikingly developed and separated anteriorly. Vaginal apophysis with inner plate more or less round to ovoid, deeply concave longitudinally; outer plate larger, somewhat shield-like. Vaginal appendix not developed.

**Remark:** This subgenus also resembles subgen. *Ohomopterus* Reitter, 1896, in general appearance, and previously many domestic entomologists confused the very group with *Ohomopterus japonicus*-group which are widely distributed and endemic evidently in Japanese Archipelago and erroneously recorded the latter being occurred in Korea in their publication due to misidentification, till Lee (1977) revised and rectified it recently. As in case of subgen. *Isiocarabus* Reitter,

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1896, this subgenus is also separated from subgen. *Ohomopterus* Reitter, 1896, by the absence of vaginal appendix in female genitalia.

Key to species of *Parhomopterus*

1. Elytra usually gently contracted anteriorly, with shoulders more or less obtusely protrudent. Endophallus of male genitalia bearing with 2 lateral membraneous lobes basally in dorsal shape; ligula reduced to a narrow slender patch of pigmented granules; copulatory piece produced at middle portion of dorsal wall. Female epivaginal sclerite small, often markedly narrow transversely . . . . . *Carabus (Parhomopterus) sternbergi*  
— Elytra usually strikingly narrowly contracted anteriorly, with shoulders rather roundly protrudent. Endophallus of male genitalia bearing with strikingly well developed 4 lateral membraneous lobes basally in dorsal shape; ligula reduced to a small ovoid patch of pigmented granules; copulatory piece produced at distal portion of dorsal wall. Female epivaginal sclerite large and broad . . . . .  
. . . . . *Carabus (Parhomopterus) namhaedoensis* sp. nov.

10. *Carabus (Parhomopterus) sternbergi* Roeschke, 1898

우리마성벌레 (스데른베르크마성벌레, 스텐베르크마성벌레, 우리줄마성벌레)

*Carabus Sternbergi* Roeschke, 1898, Ent. Nachr. 8:121-122.

Type-locality: Korea (Wönsan:HN).

**Description:** General coloration black, usually with greenish, bluish, or golden reddish coppery to various metallic luster on dorsum.

Head moderately stout posteriorly; frontal impressions deep prominent, rarely reaching middle of eyes, often finely punctulate mesally, and rather rugose posteriorly; vertex rather flat, usually very obscure transversely grooved to posterior margins of eyes or rarely evanescent; punctures rather variable, fine sparse to prominently dense. Mandibles with dorsal surface smooth, often scattered with sparse micropunctures. Maxillary palpi with apical segments gently extending distally, about as long as or very slightly shorter than penultimate segments. Labium with mentum generally lacking setae; median tooth short subtriangularly pointed; labial palpi with apical segments more or less subtriangular, and apparently shorter than penultimate segments (ratio, 1: 1.25-1.4). Submentum generally with a pair or more of gular setae.

Antennae moderately slender, usually reaching one-third of elytra in male; hairy segments dark rufous, 5th or 6th to 8th or 9th segments with ventral hairless areas in male.

Pronotum wider than long (ratio, 1: 0.7-0.8), more or less variable in shape, with 2 or 3 pairs of lateral setae; lateral margins rather narrowly bordered, roundly contracted anteriorly and slightly sinuate before hind angles; hind angles often small subtriangularly produced and bent downwards, or sometimes markedly short; basal foveae rather narrow and shallow, slightly raised at its outer side.

Elytra ovoid to elongate oval, broadest next to middle distally, with sculpture triploid or pentaploid, heterodyname or often homodyname; primary intervals often slightly wider than other intervals, segmented by a series of 10 to 15 foveae which are rather deeply sculptured and bearing metallic luster; secondaries and tertiaries more or less homogeneous, even linearly raised; quaternaries often rather irregularly present, or sometimes entirely absent, if present, apparently narrower and lower than the preceding two intervals, bordered by rather irregularly spaced striae punctures with primaries; shoulders usually more or less broad obtusely protrudent. Hind wings elongate subtriangularly atrophied, with membrane thickened.

Chaetotaxy of hind coxae generally bisetose, lacking postero-proximal setae.

Male aedeagus even roundly arcuate, smooth or carinate on near middle of ventral side, with end piece broad or subacutely terminated: ostium generally not exceeding half of aedeagal shaft, with left basal area wrinkly swollen or simple. Endophallus long, bearing with 2 lateral membranous lobes basally in dorsal shape; ligula degenerated into a narrow slender patch of pigmented granules; copulatory piece produced at middle portion of dorsal wall.

Female genitalia with bursa copulatrix well developed and separated anteriorly. Vaginal apophysis with its vertical plate rather high; inner plate round or somewhat ovoid, deeply concave along vertical plate; outer plate broad, rather variable; vaginal appendix not developed. Epivaginal sclerite small, often markedly narrow transversely.

Length: Male 22-28mm, female 23-29mm.

Distribution: Korea, China (Eastern part, Manchuria).

**Remark:** This species is an apparently polytypic one occurring widely in Korea and Eastern China including Manchuria, and may be splitted into several subspecies mainly by the genitalic characters. As far as the authors are aware, hitherto these subspecies are allopatric in distribution except at the only locality — Mt. Pangdaesan, GW, Central Korea — where there collected 2 subspecies, and deposited now in the authors' collection, highland one and lowland one, but their collecting data are not credible and thus it needs further sufficient investigation wheather they are really sympatric in this area or an artificial error in treating material deposited. It is possible that some populations of high altitudes and islands are distinct specifically, though others show a clinal tendency of variation within their range towards the other populations occurring in adjacent regions, but the authors provisionally treat and describe them as a series of subspecies under the present species as following.

#### Key to subspecies of *Carabus (Parhomopterus) sternbergi*

1. Body generally elongate oval and broadly rounded . . . . . 2.  
 —. Body strikingly narrow and elongate . . . . *Carabus (Parhomopterus) sternbergi angustus*
2. Epivaginal sclerite in female genitalia with a median process strikingly narrower than long, somewhat lamella-like . . . . . 3.  
 —. Epivaginal sclerite in female genitalia with a median process strikingly wider than long, somewhat wide cup-like . . *Carabus (Parhomopterus) sternbergi huchangensis* subsp. nov.
3. Aedeagus with shaft strikingly carinate ventrally . . . . . 2.  
 —. Aedeagus with shaft simple smooth or at most somewhat swollen on ventral side . . . . 9.
4. Aedeagus subobliquely carinate on near middle of left ventral side, and short convexly protrudent at its right side, thus between these 2 carinae markedly concave. Elytral sculpture more or less pentaploid, with quaternary intervals narrow and low, bordered by a series of somewhat sparse punctures with primaries . . . . . 5.  
 —. Aedeagus more or less subobliquely carinate on near middle of left ventral side, but with its right side smooth and not protrudent. Elytral sculpture triploid or pentaploid, often with quaternary intervals present or evanescent . . . . . 7.
5. Pronotum with hind angles generally very shortly produced. Copulatory piece in endophallus short and stout, often wide distally. Inhabiting in Is. Chejudo . . . . . *Carabus (Parhomopterus) sternbergi touzalini*  
 —. Pronotum with hind angles short, but well protrudent. Copulatory piece in endophallus usually slender . . . . . 6.

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6. Aedeagus with end piece relatively larger and its dorsal margin more or less deeply round  
 ..... *Carabus (Parhomopterus) sternbergi honamensis* subsp. nov.  
 —. Aedeagus with end piece relatively smaller and its dorsal margin somewhat oblique  
 roundly narrowed ..... *Carabus (Parhomopterus) sternbergi sternbergi*
7. Aedeagus with end piece short, not subparallel-sided; copulatory piece moderately stout  
 ..... 8.  
 —. Aedeagus with end piece long spatulate, somewhat subparallel-sided: copulatory piece  
 markedly small ..... *Carabus (Parhomopterus) sternbergi kojedoensis* subsp. nov.
8. Aedeagus with end piece relatively broad, slightly shorter than wide .....  
 ..... *Carabus (Parhomopterus) sternbergi palgongsanensis* subsp. nov.  
 —. Aedeagus with end piece a little longer than wide .....  
 ..... *Carabus (Parhomopterus) sternbergi tongdosanus* subsp. nov.
9. Aedeagus roundly curved distally; left basal area of ostium wrinkly swollen. Copulatory piece  
 moderately stout ..... 10.  
 —. Aedeagus less curved distally; left basal area of ostium simple smooth. Copulatory piece  
 markedly small ..... *Carabus (Parhomopterus) sternbergi chirisanensis* subsp. nov.
10. Aedeagus with shaft somewhat obscurely inflated on near middle of ventral side, but not  
 carinate; end piece broad, rather roundly terminated dorsally. Elytral sculpture triploid or  
 sometimes pentaploid; quaternary intervals evanescent or weakly present .....  
 ..... *Carabus (Parhomopterus) sternbergi sobaeksanensis* subsp. nov.  
 —. Aedeagus with shaft simple smooth or very obscurely inflated on near middle of ventral  
 side; end piece rather narrow and subacute. Elytral sculpture generally triploid; quaternary  
 intervals evanescent ..... *Carabus (Parhomopterus) sternbergi cartereti*

10-1. *Carabus (Parhomopterus) sternbergi angustus* Roeschke, 1898

산우리떡정벌레

*Carabus Sternbergi* var. *angusta* Roeschke, 1898, Ent. Nachr. 8:122<sup>①</sup>.

*Carabus (Carabus Sect. Tylocarabus) Sternbergi* var. *angustus*: Csiki, 1927, Col. Cat. 91:222  
 (Korea).

*Carabus Billbergi Sternbergi* f. *angusta* Breuning, 1928, Col. Centr. 2(5, 6):257, 260 (Highland  
 in Korea).

*Carabus (Carabus Sect. Eucarabus) sternbergi sternbergi* m. *angusta*: Breuning, 1932, Best.-Tab.  
 eur. Col. 104:439 (Highland in Korea).

*Carabus (Tylocarabus) sternbergi angustus*: Yano, 1941, Nipp. Koch, 4(1):18<sup>②</sup>.

*Carabus (Eucarabus) sternbergi sternbergi* (partim): Deuve, 1982, Nouv. Rev. Ent. 12(2):  
 126-127(Corée).

**Type-locality:** Korea (High altitude of northeastern part).

**Description:** Body strikingly narrower and enlongater than the nominate subspecies. Male and  
 female genitalic characters not known.

**Length:** unknown.

**Locality:** Exactly unknown, but according to the original description it would be a high altitude  
 of Korea, certainly it may be Northeastern area neighboring Wonsan<sup>①</sup>.

HB : Chuül (=Shuotsu<sup>②</sup>).

**Distribution:** Korea (High altitude of northeastern part).

**Remark:** Unfortunately the authors have not got the chance to examine the type-specimen. So, the exact taxonomic position is uncertain yet. And furthermore, Deuve (1982) recently treated it as a junior synonym of the nominate subspecies.

**10-2. *Carabus (Parhomopterus) sternbergi huchangensis* Kwon et Lee, subsp. nov.** 후창우리떡정벌레

**Description:** Body rather smaller than the nominate subspecies.

Pronotum more or less roundly convex mesally; hind angles about as long as its basal width, subacute and well produced, rather flat; basal foveae markedly shallow and strong rugosely punctulate, its outer lateral sides continuously elevated to hind angles and deeply bordered by the grooves of lateral margins.

Elytra moderate oval, roundly and gradually convex mesally; sculpture partly pentaploid, with quaternary intervals often irregularly bordered by a series of rather sparse striae punctures with primaries.

Female epivaginal sclerite with a median process strikingly wider transversely, somewhat wide cup-like in shape. Vaginal apophysis with inner plate moderately circular and gently deep concave along vertical plate.

**Length:** Female 21.4mm.

**Type-examined:** Holotype female, Huch'ang, PB, N. Korea, 26, VII, 1935, coll. S.M. Lee.

**Remark:** The present new subspecies is characterized by the shape of female epivaginal sclerite which is entirely different from that of other related subspecies, though the male is unknown yet.

**10-3. *Carabus (Parhomopterus) sternbergi touzalini* Lapouge, 1911** 제주우리떡정벌레

*Carabus Touzalini* Lapouge, 1911, Misc. Ent. 19(1):5-7 (Ile Quelpart).

*Carabus Albrechti* (nec Morawitz): Okamoto, 1924, Bull. Agr. Exp. Stat. Gov. Gen. Chos. 1 (2): 160-161 (Quelpart Island).

*Carabus (Carabus Sect. Tylocarabus) Touzalini*: Csiki, 1927, Col. Cat. 91: 222, pl. 8 (14) (Insel Quelpart).

*Carabus Billbergi Sternbergi* (partim): Breuning, 1928, Col. Centr. 2 (5, 6):257, 259-260 (Insel Quelpart).

*Morphocarabus (Parhomopterus) sternbergi touzalini*: Lapouge, 1931, Gen. Ins. 192:630, pl. 8 (14) (Ile Quelpart).

*Carabus (Carabus Sect. Eucarabus) sternbergi sternbergi* (partim): Breuning, 1932, Best.-Tab. eur. Col. 105: 439-440 (Insel Quelpart).

*Carabus (Tylocarabus) touzalini*: Yano, 1941, Nipp. Koch. 4 (1): 18 ①.

*Carabus (Ohomopterus) albrechti* (partim): Kurosa, 1949, Bull. tak. Ins. 60: 2 (I., Chejudo).

*Carabus albrechti* (nec Morawitz) + *C. sternbergi* (partim): Cho, 1963a, Hum. Sci., Nat. Sci. Kor. Univ. 6:200 (Quelpaert Island).

*Carabus albrechti* (nec Morawitz) + *C. sternbergi*: Cult. & Inf. Min., 1968, Rep. Acad. Surv. Mt. Hanlasan: 258 ②.

*Carabus albrechti* (nec Morawitz): Zool. Soc. Kor., 1968, Nom. An. Kor. 2:97 (Korea).

*Carabus albrechti* (nec Morawitz): Seok, 1970, Chej. Ch'ongs. 5:75 (Is. Chejudo).

*Eucarabus sternbergi sternbergi* (partim): Lee, 1977, Kor. Journ. Ent. 7(2):38 ③-④.

*Carabus sternbergi sternbergi* (nec Roeschke): Nakane, 1977b, Bull. Nat. Sci. Mus. Ser. A (Zool.). 3(4):242 ①-⑤.

*Carabus sternbergi* (partim): Kim, 1978, Distr. Atl. Ins. Kor. 2:20, pl. 6 (CA 05) ⑥-⑦.

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*Carabus (Eucarabus) sternbergi sternbergi* (partim): Deuve, 1982, *Nouv. Rev. Ent.* 12(2): 127 (Che-Ju-Do).

**Type-locality:** Korea (Is. Chejudo).

**Description:** Body generally as in the nominate subspecies, but smaller.

Gular setae generally one pair present. Pronotum roundly convex, usually bisetose laterally; hind angles apparently far less than half as long as its basal width, generally very short subtriangular and less protrudent but distinctly inclined downwards.

Elytra with sculpture usually pentaploid; quaternary intervals rather irregularly present, apparently narrower and lower than other intervals, bordered by a series of rather irregularly spaced stria punctures with primaries.

Male aedeagus roundly arcuate, bent before base of end piece in lateral shape, rather subobliquely carinate on near middle of left ventral side, and short convexly protrudent at its right side, thus between these 2 carinae markedly concave; end piece a little longer than wide, with its dorsal margin somewhat suboblique roundly terminated. Endophallus with copulatory piece rather stout, wide distally; terminal sclerites on dorsal wall small to medium sized.

**Length:** Male 22-24mm, female 23-27mm.

**Locality:** JJ : Mt. Hallasan (=Mt. Hal-La<sup>③</sup>, Mt. Hanlasan<sup>②</sup>, Mt. Hanna<sup>⑤</sup>), Hawŏn (=Ha-Weon<sup>④</sup>), Ŏrimok<sup>⑥</sup>, Sŏgwip'o<sup>⑦</sup> (=Seikiho<sup>①</sup>).

**Distribution:** Korea (Is. Chejudo).

**Remark:** Breuning (1928) suppressed this subspecies under the nominate subspecies as a junior synonym, but it has a sufficient character for valid subspecific status as shown above.

10-4. *Carabus (Parhomopterus) sternbergi honamensis* Kwon et Lee, subsp. nov.

호남우리막장벌레

*Eucarabus sternbergi sternbergi* (partim): Lee, 1977, *Kor. Journ. Ent.* 7(2):38<sup>①</sup>.

*Eucarabus sternbergi*: Kim et Nam, 1977, *Rep. Kor. Ass. Cons. Nat.* 11:130<sup>②</sup>.

*Carabus sternbergi* (partim): Kim, 1978, *Distr. Atl. Ins. Kor.* 2:20. pl. 6 (CA 05)<sup>③</sup>.

**Description:** Body generally as in the nominate subspecies.

Gular setae usually one or more pairs present. Pronotum usually trisetose laterally; hind angles a little shorter than half as long as its basal width, rather short subtriangular and inclined downwards.

Elytra with sculpture usually pentaploid; quaternary intervals rather irregularly present, apparently narrower and lower than other intervals, bordered by a series of rather irregularly spaced stria punctures with primaries.

Male aedeagus more or less subobliquely carinate on near middle of left ventral side, and short convexly protrudent at its right side, thus between these 2 carinae markedly concave; end piece relatively large, sometimes as long as or longer than wide, curvature of dorsal margin deep roundly broadened. Endophallus with terminal sclerites on dorsal wall very small.

Female vaginal apophysis with inner plate usually ovoid transversely.

**Length:** Male 25-28mm, female 27-29mm.

**Type-examined:** Holotype male, Mt. Chogyesan, JN, S. Korea, 5, VI, 1983, coll. Y.J. Kwon; paratypes: 3 males, 5 females, same data as holotype; 1 male, the same locality, 10, VIII, 1976, coll. S.M. Lee; Mt. Turyunsan, JN, S. Korea, 6 males, 7 females, 2, X, 1983, coll. Y.J. Kwon.

**Locality:** JJ : Is. Ch'ujado (=Is. Chu-Ja-Do<sup>①</sup>).

JN : Mt. Chogyesan (=Mt. Jogyesan<sup>②</sup>, Songgwangsa<sup>③</sup>).

**Remark:** This new subspecies is distinguishable well from other related groups by the shape of end piece in the male aedeagus. The material from Is. Ch'ujado, JJ, S. Korea (1 male, 31, VII, 1972, coll. S.M. Lee) is closely allied to this new subspecies and in this report it is provisionally treated under the present race till further study with sufficient material.

#### 10-5. *Carabus (Parhomopterus) sternbergi sternbergi* Roeschke, 1898

우리따상벌레, 마야산따상벌레, 김성따상벌레, 우리속따상벌레

*Carabus bilbergi* (sic et nec Mannerheim): Bates, 1888, Proc. Zool. Soc. Lond.: 368 (Korea).

*Carabus Sternbergi* Roeschke, 1898, Ent. Nachr. 8:121-122 <sup>①</sup>.

*Carabus Sternbergi* nom.: Born, 1913, Soc. Ent. 28(19):78 <sup>①</sup>.

*Carabus De Haani* (sic et nec Chaudoir): Kano, 1923, Ins. World. 27 (315): 379 (Korea: southern part).

*Carabus De Haani* (sic et nec Chaudoir): Kano, 1924, Ibid. 28 (326): 348 (Korea).

*Carabus (Carabus Sect. Tylocarabus) Sternbergi*: Csiki, 1927, Col. Cat. 91: 222 <sup>①</sup>.

*Carabus Billbergi Sternbergi* (partim): Breuning, 1928, Col. Centr. 2 (5, 6): 257, 259-260 <sup>①-②</sup>.

*Morphocarabus (Parhomopterus) sternbergi sternbergi*: Lapouge, 1931, Gen. Ins. 192:630 (Corée).

*Carabus (Carabus Sect. Eucarabus) sternbergi n. sternbergi* (partim): Breuning, 1932, Best.-Tab. eur. Col. 105: 43a-440 <sup>1-2</sup>.

*Carabus ohomopterus mayasanus* (sic et nec Bates): Mochizuki et Tsunekawa, 1937, Journ. Chos. Nat. Hist. Soc. 22:76 <sup>③</sup>.

*Carabus (Carabus Sect. Tylocarabus) sternbergi*: Wu, 1937, Cat. Ins. Sin. 3:55 <sup>④</sup>.

*Carabus mayasanus* (nec Bates): Narita, 1939, Sci. Rep. Keit. 4:44 <sup>⑤</sup>.

*Carabus ohomopterus mayasanus* (sic et nec Bates): Mochizuki et Masui, 1939, Ibid. 4:53 <sup>③</sup>.

*Carabus ohomopterus mayasanus* (sic et nec Bates): Ishii, 1940, Ibid. 5:40 <sup>⑥</sup>.

*Carabus (Tylocarabus) sternbergi*: Yano, 1941, Nipp. Koch. 4(1):18 <sup>⑦</sup>.

*Carabus japonicus* ab. *mayasanus* (nec Bates) + *C. albrechti* (nec Morawitz) + *C. sternbergi* + *C. s. lauschanensis* (nec Born): Cho, 1957, Hum. & Sci., Nat. Sci. Kor. Univ. 2:178-180 (Korea).

*Carabus insulicola* (nec Chaudoir): For. Exp. Stat., 1959, Handb. Kwangn. Exp. For.: 96 <sup>⑧</sup>.

*Carabus sternbergi* (partim): Cho, 1963a, Hum. & Sci., Nat. Sci. Kor. Univ. 6:201 <sup>②, ⑨</sup>.

*Carabus japonicus mayasanus* (nec Bates) + *C. albrechti* (nec Morawitz) + *C. sternbergi* + *C. s. lauschanensis* (nec Born): Cho, 1963b, Journ. Nat. Acad. Sci. Rep. Kor. Nat. Sci. Ser. 4:80-81 <sup>②, ⑩-⑪</sup>.

*Carabus japonicus* (nec Motschulsky) + *C. sternbergi* + *C. s. lauschanensis* (nec Born): Zool. Soc. Kor., 1968, Nom. An. Kor. 2:97 (Korea).

*Carabus japonicus* (nec Motschulsky): Cho, 1969, Ill. Encycl. Faun. & Flor. Kor. 10:130, pl. 4 (17) (Korea).

*Carabus japonicus* (nec Motschulsky): Kim et Kim, 1972, Rep. Kor. Ass. Cons. Nat. 5:76 <sup>⑬</sup>.

*Carabus (Parhomocarabus) sternbergi* (sic): Ishikawa, 1973, Bull. Nat. Sci. Mus. Tokyo. 16 (2): 207.

*Carabus (Isiocarabus) fiduciarius longigor* Breuning, 1975, Nouv. Rev. Ent. 5(2):129 <sup>⑭</sup>.

*Eucarabus sternbergi sternbergi* (partim): Lee, 1977, Kor. Journ. Ent. 7(2): 38 <sup>⑬-⑭</sup>.

*Carabus sternbergi* (partim): Kim, 1978, Distr. Atl. Ins. Kor. 2:20, pl. 6 (CA 05) <sup>⑥, ⑧, ⑪-⑬</sup>.

*Eucarabus sternbergi*: Yoon et Nam, 1979, Rep. Kor. Ass. Cons. Nat. 17:144 <sup>⑫</sup>.

*Eucarabus sternbergi*: Yoon et Nam, 1980, Bas. Plan Constr. Nat. Stud. Kyongg. Prov.:38 <sup>⑬</sup>.

*Carabus conciliator* (nec Fischer): Kim et Chang, 1982, Gen. Rep. Nat. Cond. 1:144 <sup>⑭</sup>.

*Carabus (Eucarabus) sternbergi sternbergi* (partim): Deuve, 1982, Nouv. Rev. Ent. 12(2) 126-127 <sup>⑫, ⑬</sup>.

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Type-locality: Korea (Wonsan: HN).

Description: Body generally larger and broader than other subspecies.

Gular setae usually one or more pairs present. Pronotum usually trisetose or bisetose laterally, with hind angles short subtriangular, slightly shorter than half or about half as long as its basal width, somewhat inclined downwards.

Elytra rather flat and gradually rounded, sculpture always pentaploid; quaternary intervals rather irregularly present, apparently narrower and lower than other intervals, bordered by a series of rather irregularly spaced stria punctures with primaries.

Male aedeagus roundly arcuate, widest distal two-fifths, rather subobliquely carinate on near middle of left ventral side, and short convexly protrudent at its right side, thus between these two carinae markedly concave; end piece broad, with dorsal margin suboblique roundly terminated; ostium with left basal area wrinkly swollen. Endophallus with copulatory piece more or less slender distally; terminal sclerites on dorsal wall comparatively small.

Length: Male 22-28mm, female 24-29mm.

Locality: CB : Mt. Songnisan (=Mt. Sog-Ni<sup>29</sup>).

CN : Mt. Ch'ilgapsan, Mt. Kwangdöksan, Mt. Kyeryongsan<sup>42</sup> (=Mt. Ge-Ryong<sup>40</sup>), Mt. Södaesan.

GB : Mt. Hwanghaksan.

GG : Mt. Aengmubong<sup>44</sup> (=Mt. Aeng-Mu-Bong<sup>22</sup>, Pogwangsa<sup>11</sup>), Mt. Ch'önmasan (=Mt. Cheon-Ma<sup>24</sup>), Mt. Kamaksan (=Mt. Gam-Ag<sup>18</sup>), Kwangnüng<sup>48</sup> (=Gwang-Neung<sup>23</sup>), Mt. Myöngjisan<sup>45</sup> (=Mt. Myeong-Ji<sup>17</sup>), Namhansansöng<sup>49</sup>, Mt. P'ap'yongsan<sup>43</sup>, Mt. Pukhansan (=Mt. Bug-Han<sup>27</sup>), Pyökcche<sup>46</sup>, Seoul<sup>2</sup> (=Chahamunbak<sup>27</sup>, Chöngnung<sup>28</sup>, Mt. Namsan<sup>6</sup>, Mt. Nam-san<sup>28</sup>), Is. Sönmido<sup>42</sup>, Mt. Soyosan<sup>3</sup> (=Mt. Shoyo<sup>15</sup>, Soyo-san<sup>10</sup>, Mt. So-Yo<sup>13</sup>), Mt. Tobongsan<sup>45</sup> (=Mt. Do-Bong<sup>25</sup>), Mt. Tögamsan (=Mt. Deog-Am<sup>21</sup>), Iss. Tökchökkundo (=Is. Mungap<sup>46</sup>), Mt. Wangbangsan (=Mt. Wang-Bang<sup>20</sup>), Mt. Yongmunsan<sup>44</sup> (=Mt. Yong-Mun<sup>26</sup>).

GW : Mt. Ch'iaksan (=Mt. Chi-Ag<sup>16</sup>), Kangch'on<sup>41</sup>, Mt. Pangdaesan (=Mt. Bang-Dae<sup>43</sup>), P'ungsuwön (Hpoung-Syou-Ouen<sup>44</sup>).

HH : Haeju (=Haezu<sup>11</sup>).

HN : Sögwangsa (=Shakuoji<sup>7</sup>), Wönsan<sup>9</sup> (=Aeusan<sup>4</sup>: sic, Gensen<sup>1</sup>, Wonsan<sup>12</sup>).

JB : Mt. Naejangsan<sup>44</sup>, Mt. Tögyusan (=Muju Gucheondong<sup>13</sup>, Muju Kuch'öndong<sup>43</sup>).

Distribution: Korea (Central to southern part).

10-6. *Carabus* (*Parhomopterus*) *sternbergi kojedoensis* Kwon et Lee, subsp. nov.

거제우리막정벌레

*Eucarabus sternbergi sternbergi* (partime): Lee, 1977, Kor. Journ. Ent. 7(2):38<sup>1</sup>.

Description: Body generally as in the nominate subspecies.

Gular setae usually one or more pairs present. Pronotum trisetose or bisetose laterally, slightly flat mesally; hind angles short subtriangular, slightly shorter than half as long as its basal width, rather inclined downwards.

Elytra usually triploid or rarely partly pentaploid; quaternary intervals, if present, very narrow and irregularly bordered.

Male aedeagus more or less subobliquely carinate on near middle of left ventral side, but its right side smooth and not protrudent, shaft deep roundly but gently curved before basal area of end piece: end piece long spatulate, somewhat subparallel-sided, with dorsal margin round subobliquely terminated in lateral shape; ostium with left basal area wrinkly swollen. Endophallus with copulatory piece markedly small, rather gradually narrowed apically.

Female vaginal apophysis with inner plate rather ovoid transversely, somewhat narrow roundly extending laterally.

**Length:** Male 24-25mm, female 25-29mm.

**Type-examined:** Holotype male, Is. Kōjedo, GN, S. Korea, 19, VII, 1970, coll. S. M. Lee; paratypes: 2 males, 5 females, same data as holotype; 2 males, 17 VII, 1970; 1 female, 20, VII, 1970; all the same locality, coll. S. M. Lee.

**Locality:** GN : Is. Kōjedo (=Mt. Og-Neyeo-Bong<sup>①</sup>).

**Remark:** The present new subspecies is easily distinguished from other related subspecies by the shape of male genitalia, and is coming near to *Carabus (Parhomopterus) namhaedoensis* Kwon et Lee, sp. nov. considering from the shape of aedeagal end piece.

**10-7. *Carabus (Parhomopterus) sternbergi palgongsanensis* Kwon et Lee, subsp. nov.** 팔공우리막정벌레

**Description:** Hairy segments of antennae in male with 5th to 8th or sometimes 9th segments bearing ventral hairless depressed areas. Submentum usually with a pair of gular setae.

Pronotum usually trisetose laterally; hind angles a little shorter than half as long as its basal width, short subacutely produced, rather inclined downwards.

Elytra more or less ovally elongate, with sculpture pentaploid; quaternary intervals rather irregularly present, apparently narrower and lower than other intervals, bordered by a series of rather irregularly spaced stria punctures with primaries.

Male aedeagus rather roundly curved mesally and more evenly bent distally, rather subobliquely carinate on near middle of left ventral side, but with its right side smooth and not protrudent; end piece somewhat gradually curved at base ventrally, rather broad, usually shorter than its basal width.

**Length:** Male 22-24mm, female 23-27mm.

**Type-examined:** Holotype male, Mt. P'algongsan, GB, S. Korea, 3, IX, 1982, coll. Y.J. Kwon; paratypes: 1 female, same data as holotype; 3 males, 11 females, 10, IX, 1982; 15 males, 18 females, 24, V, 1983; 20 males, 25 females, 28, V, 1983, all the same locality, coll. Y. J. Kwon.

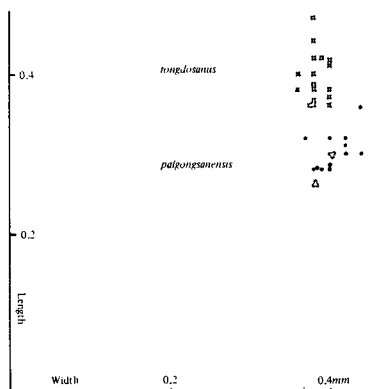


Fig. 1. Relative ratio between length and width of male aedeagal end piece in two related subspecies, *Carabus (Parhomopterus) sternbergi palgongsanensis* subsp. nov. and *Carabus (Parhomopterus) sternbergi tongdosanus* subsp. nov.

**10-8. *Carabus (Parhomopterus) sternbergi tongdosanus* Kwon et Lee, subsp. nov.** 통도우리막정벌레

*Carabus (Eucarabus) sternbergi sternbergi* (partim): Deuve, 1982, Nouv. Rev. Ent. 12(2):126<sup>①</sup>.

**Description:** Pronotum trisetose or bisetose laterally; hind angles short subacutely produced, slightly shorter than half as long as its basal width.

Elytra with sculpture usually triploid or rarely partly pentaploid; quaternary intervals, if present, irregularly and partly forming, apparently narrower and lower than other intervals, bordered by a series of rather irregularly spaced stria punctures with primaries.

Male aedeagus less curved mesally, rather subobliquely carinate on near middle of left ventral side, but with its right side smooth and not protrudent; end piece broadly producing, somewhat

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abruptly bent near base ventrally, usually longer than its basal width or some times as long as wide.

**Length:** Male 22-24mm, female 23-28mm.

**Type-examined:** Holotype male, Mt. Yŏngch'wisan, GN, S. Korea, 2, VI, 1983, coll. Y. J. Kwon; paratypes: 25 males, 30 females, same data as holotype; 1 male, 2 females, Mt. Sinbulsan, GN, S. Korea, 25, IX, 1982, coll. Y. J. Kwon.

**Locality:** GN : Pusan (=Mont Seung Hak<sup>①</sup>).

**Remark:** This new subspecies is allied to subsp. *palgongsanensis* Kwon et Lee, subsp. nov., but may be separable from the latter by the shape of male aedeagal end piece in being much longer than that of the latter relative to its basal width.

**10-9. *Carabus (Parhomopterus) sternbergi chirisanensis* Kwon et Lee, subsp. nov.**

지리우리떡장벌레

*Carabus albrecti* (sic et nec Morawitz): Hyun et Woo, 1969, Bull. Seoul Nat. Univ. For. 6:183<sup>①</sup>.

*Carabus insulicola* (nec Chaudoir): Hyun et Woo, 1970, Ibid. 7:79<sup>①</sup>.

**Description:** Hairy segments of antennae in male with 5th to 8th segments bearing ventral hairless depressed area.

Submentum with one or more pairs of gular setae. Pronotum trisetose or bisetose laterally; hind angles short subtriangular, apparently shorter than half as long as its basal width.

Elytra with sculpture generally triploid; quaternary intervals absent. Male aedeagus comparatively slender, gently curved before end piece; ventral side simple smooth without any carinae; end piece suboblique roundly narrowed dorsally; ostium with left basal area simple, not wrinkly swollen. Endophallus with copulatory piece much small.

**Length:** Male 22-25mm, female 24-28mm.

**Type-examined:** Holotype male, Mt. Chirisan, GN, S. Korea, 13, VII, 1981, coll. Y. J. Kwon; paratypes: 2 males, 5 females, same data as holotype; 40 males, 45 females, 6, VI, 1983, 25 males, 30 females, 12, VI, 1983, all the same locality, coll. Y. J. Kwon.

**Locality:** GN : Mt. Chirisan (=Mt. Jiri<sup>①</sup>).

**Remark:** The present new subspecies is easily separable from other related subspecies by the shape of male aedeagus bearing a series of unique characters of its own as given in the above description, it may be differentiated from one of the derivatives of highland groups occurring in Mts. T'aebaek and Sobaek Ranges and it has gone to one of the extreme of evolutionary degeneration which reveals doubtless the isolation of geographical or ecological condition.

**10-10. *Carabus (Parhomopterus) sternbergi sobaeksanensis* Kwon et Lee, subsp. nov.**

소백우리떡장벌레

*Eucarabus sternbergi sternbergi* (partim): Lee, 1977, Kor. Journ. Ent. 7(2):38<sup>①</sup>.

*Carabus sternbergi* (partim): Kim, 1978, Distr. Atl. Ins. Kor. 2:20, pl. 6 (CA 05)<sup>②</sup>.

**Description:** Hairy segments of antennae in male with 5th to 8th segments bearing ventral hairless depressed areas. Submentum with one or more pairs of gular setae.

Pronotum trisetose or bisetose laterally; hind angles short subtriangularly protrudent, slightly shorter than half as long as its basal width, more or less inclined downwards.

Elytra with sculpture triploid or pentaploid; quaternary intervals, if present, irregularly and partly forming, apparently narrower and lower than other intervals, bordered by a series

of rather irregularly spaced stria punctures with primaries.

Male aedeagus with shaft somewhat simple obscurely inflated on near middle of ventral margin, but not carinate; end piece comparatively broad and gently curved ventrally, rather suboblique roundly terminated dorsally. Endophallus with copulatory piece stout.

**Length:** Male 22-24mm, female 23-27mm.

**Type-examined:** Holotype male, Mt. Sobaeksan, GB, S. Korea, 24, VII, 1977, coll. S. M. Lee; paratypes; 2 males, 4 females, same data as holotype; 3 females, 1, VIII, 1977; 2 females, 2, VIII, 1977, all the same locality, coll. S. M. Lee.

**Locality:** Mt. Sobaeksan (=Mt. So-Baeg<sup>①</sup>, Hibangsa<sup>②</sup>).

**Remark:** The present new subspecies may be an intermediately element between subsp. *cartereti* and subsp. *palgongsanensis* - *tongdosanus* group, considering from the shape of male aedeagus. It is noteworthy that the material from Mt. Chuhŭlsan, GB, S. Korea (1 male, 5, VI, 1983, coll. S. M. Lee) closely resembles this new subspecies, but may be separable from the latter in having male aedeagus distinctly but obtusely carinate on ventral side, and also resembles *palgongsanensis* Kwon et Lee, subsp. nov., but the carina is less raised or sharpen. So, it may be represent possibly an intermediate element between the very two races.

#### 10-11 *Carabus (Parhomopterus) sternbergi cartereti* Deuve, 1982 강원우리마성벌레

*Eucarabus sternbergi sternbergi* (partim): Lee, 1977, Kor. Journ. Ent. 7(2):38 <sup>①-③</sup>.

*Carabus sternbergi* (partim): Kim, 1978, Distr. Atl. Ins. Kor. 2:20, pl. (CA 05) <sup>④-⑥</sup>.

*Carabus (Eucarabus) sternbergi cartereti* Deuve, 1982, Nouv. Rev. Ent. 12(2): 125-126 <sup>⑨</sup>.

**Type-locality:** Korea (Mt. Sölaksan: GW).

**Description:** Body often bearing strong metallic luster on dorsum, coloring variable.

Vertex usually less punctured. Hairy segments of antennae in male with 5th or 6th to 8th segments bearing ventral hairless depressed areas. Submentum with one or more pairs of gular setae.

Pronotum trisetose or bisetose laterally; hind angles short subacutely protrudent, usually slightly shorter than half as long as its basal width.

Elytra with sculpture generally triploid; striae deep prominent; quaternary intervals entirely absent.

Male aedeagus even roundly curved, without any carinae on ventral side, but simple smooth or very obscurely inflated on near middle ventrally; end piece rather abruptly bent near its base, comparatively small narrow and subacutely terminated apically; ostium with left basal area wrinkly swollen. Endophallus with copulatory piece moderately stout; terminal sclerites on dorsal wall prominently large.

**Length:** Male 22-24mm, female 23-27mm.

**Locality:** GW : Kŭmgangsan (=Pirobong<sup>⑥</sup>), Mt. Odaesan<sup>⑤</sup> (=Mt. O-Dae<sup>②</sup>, Puktaesa<sup>⑦</sup>), Mt. Sogŭngang, Mt. Sölaksan<sup>⑧</sup> (=Paektamsa<sup>④</sup>, Mt. Seol-ag, <sup>①</sup> Mt. Sorak National Park: Bi-Sum-Dae<sup>⑨</sup>), Mt. T'aebaksan (=Mt. Tae-Baeg<sup>③</sup>), Mt. Tut'asan.

**Distribution:** Korea (Eastern central part).

#### 11. *Carabus (Parhomopterus) namhaedoensis* Kwon et Lee, sp. nov. 남해우리마성벌레

*Eucarabus sternbergi sternbergi* (partim): Lee, 1977, Kor. Journ. Ent. 7 (2): 38 <sup>①</sup>.

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**Description:** General coloration black, usually with golden reddish coppery to greenish metallic luster on dorsum.

Head moderately stout posteriorly; frontal impressions deep prominent, not exceeding middle of eyes, rather rugose posteriorly; vertex rather flat, strongly polished and fine sparsely punctulate posteriorly, usually very obscure transversely grooved to posterior margins of eyes or evanescent mesally. Mandibles with dorsal surface smooth. Maxillary palpi with apical segments slightly extending distally, about as long as penultimate segments. Labium with mentum generally lacking setae; median tooth short subtriangularly pointed; labial palpi with apical segments slightly extending distally, apparently shorter than penultimate segments (ratio, 1: 1.4). Submentum usually with a pair or more of gular setae.

Antennae moderately slender, reaching one-third of elytra in male; hairy segments dark rufous, 6th to 8th segments with ventral hairless areas in male.

Pronotum wider than long (ratio, 1: 0.75-0.78), with 2 or 3 pairs of lateral setae; lateral margins narrowly bordered and subobliquely raised posteriorly, roundly contracted anteriorly and slightly sinuate before hind angles; hind angles short subtriangularly protrudent, slightly shorter than half as long as its basal width; basal foveae somewhat broadly deep.

Elytra usually strikingly narrowly contracted anteriorly, with shoulders rather roundly protrudent, broadest middle to apical third, with lateral margins gradually extending to middle and roundly contracted apically; sculpture generally triploid heterodynamic; primary intervals slightly wider than remainder intervals, segmented by a series of 10 to 12 foveae; secondaries and tertiaries rather homogeneous, even linearly raised; quaternaries evanescent. Hind wings elongate subtriangularly atrophied and thickened.

Chaetotaxy of hind coxae generally bisetose, lacking postero-proximal setae. Abdomen with transverse sulci interrupted mesally.

Male aedeagus slender, rather deeply curved at base, somewhat gradually turned to right apically; ventral side simple smooth, without any carinae; end piece spatulate, more or less subtruncate; ostium much long, nearly exceeding half of shaft, with basal area simple smooth, not swollen. Endophallus long, bearing with strikingly well developed 4 lateral membranous bladder-like lobes basally in dorsal shape; ligula greatly reduced to a small ovoid patch of pigmented granules; copulatory piece strikingly small, somewhat cone-like, produced at distal portion of dorsal wall.

Female genitalia with bursa copulatrix well developed and separated anteriorly. Vaginal apophysis with inner plate ovoid and strongly extending laterally, deeply incised along vertical plate. Epivaginal sclerite markedly large and broad, rather roundly extending anteriorly.

**Length:** Male 26mm, female 28.5mm.

**Type-examined:** Holotype male, Mt. Kumsan, in Is. Namhaedo, GN, S.Korea, 13, VI, 1977, coll. S.M. Lee; paratype: 1 female, same data as holotype.

**Locality:** GN : Is. Namhaedo (=Mt. Geum-san<sup>①</sup>).

**Remark:** The present new species closely resembles *Carabus (Parhomopterus) sternbergi* Roeschke, 1898 (especially subsp. *kojedoensis* Kwon et Lee, subsp. nov.), but apparently separated from it by the structure of male and female genitalia which enables sufficiently this new one to put the full specific status, although they are astonishingly homogeneous in superficial resemblance. This new species may be also derived from the common stock of *sternbergi* and has gone to an extreme of evolutionary speciation possibly accompanied by the geographical segregation of the island where its population has been inhabited. Sympatry or hybridization between them is not confirmed yet.

Subgenus *Orientocarabus* Kwon et Lee, subgen. nov. 아무르딱정벌레 아속

Type-species: *Carabus billbergi* Mannerheim, 1827

Type-locality: U.S.S.R. (E. Siberia).

**Diagnosis:** Body generally small to medium sized, somewhat broad oval to elongate oval, or elongate. Coloring black, usually with greenish, bluish, or golden reddish coppery to various metallic luster on dorsum.

Head generally moderate; frontal impressions prominent anteriorly, rather rugose posteriorly, reaching anterior portion of eyes; vertex slightly convex mesally with punctures irregular, partly more or less rugosely sculptured; neck rather stout. Labrum rather deeply incised mesally. Mandibles generally short and broad, with inner margins more or less straight except apices which are abruptly bent inwards and pointed; dorsal surface usually smooth, often scattered with sparse micropunctures. Maxillary palpi moderate to slightly short, with apical segments usually about as long as penultimate segments. Labium generally without setae on mentum, with a median tooth short subtriangular; labial palpi moderate to slightly short, with penultimate segments generally bisetose. Submentum rather flat, with a pair or more of gular setae present. Eyes prominent, well protrudent laterally.

Antennae short, a little exceeding shoulders of elytra, with 2nd segments usually exceeding half of 3rd segments; 3rd segments slightly compressed basally; hairy segments in male with ventral hairless areas.

Pronotum generally wider than long, widest near middle laterally, usually bisetose on each side; lateral margins rather broad, more or less gently rounded anteriorly and posteriorly, or very slightly sinuate before hand angles; hind angles usually broad subtriangular, shortly produced.

Elytra ovoid to elongate oval, with sculpture triploid heterodyname or very rarely partially pentaploid; primary intervals catenulate, shortly segmented; tertiaries lower than secondaries, and having somewhat transverse striae or often forming a row of connected granules; preapical emarginations generally very obscure; humeral serrations of lateral margins absent. Hind wings subtriangularly atrophied.

Chaetotaxy of hind coxae generally bisetose, with postero-proximal setae absent. Hind trochanters smooth, without any setiferous pore. Abdomen with transverse sulci weakly carved, interrupted mesally, or often obscure.

Male aedeagus gently arcuate, with end piece simple broad or strongly bent and knob-likely terminated. Endophallus moderately long, bearing lateral membraneous lobes basally and distally; copulatory piece prominently developed.

Female genitalia with bursa copulatrix strikingly developed and separated anteriorly. Vaginal apophysis with inner plate rather round, deeply concave longitudinally; outer plate larger, somewhat shield-like. Vaginal appendix not developed.

**Remark:** Lapouge(1932) erected subgen. *Apocarabus* for spp. *stscheglowi* Mannerheim, 1827 and *billbergi* Mannerheim, 1827, but the latter species is apparently splitted out from the very subgenus by the chaetotaxy of pronotum and the structure of male genitalia, thus is treated here as a full independent subgeneric status. This new subgenus also shares some common characters with subgen. *Tylocarabus* Reitter, 1896, in the genitalic structure, but the latter can be separated from this one in having antennae moderately long and without ventral hairless areas in hairy segments of male, and in having endophallus lacking lateral lobes on distal portion.

## 12. *Carabus (Orientocarabus) billbergi* Mannerheim, 1827

참아무르딱정벌레

*Carabus Billbergi* Manerheim, 1827, Ess. Ent. 6:25.

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Type-locality: U.S.S.R. (E. Siberia).

The nominate subspecies is distributed in Eastern Siberia and poorly surveyed in the geographical variations hitherto, but is separable from the following subspecies in being more larger body size and in having slightly lower primary intervals on elytra.

12-1. *Carabus (Orientocarabus) billbergi pumilus* Kraatz, 1886 아무르딱정벌레 (아무르딱정벌레, 청동딱정벌레)

*Carabus Billbergi* var. *pumilus* Kraatz, 1886, Deutsch. Ent. Zeitschr. 30:263-264.

*Carabus bilbergi*(sic): Kano, 1923, Ins. World. 27(315):379(Korea).

*Carabus bilbergi*(sic): Kano, 1924, Ibid. 28(326):348(Korea).

*Carabus Billbergi* f. *pumila*: Breuning, 1928, Col. Centr. 2(5,6): 257-259 ①.

*Carabus (Carabus Sect. Eucarabus) billbergi* m. *pumila*: Breuning, 1932, Best.-Tab. eur. Col. 105:437 ②-④.

*Carabus bilbergi*(sic): Yano, 1941, Nipp. Koch. 4(1):20(Corea).

*Carabus billbergi* + *C. b. humila*(sic) + *C. truncaticollis*(nec Eschscholtz): Cho, 1957, Hum. & Sci., Nat. Sci. Kor. Univ. 2:180-181(Korea).

*Carabus billbergi pumila* + *C. truncaticollis*(nec Eschscholtz): Cho, 1963b, Journ. Nat. Acad. Sci. Rep. Kor. Nat. Sci. Ser. 4:83 ⑤-⑧.

*Carabus bilbergi pumila*(sic) + *C. truncaticollis*(nec Eschscholtz): Zool. Soc. Kor., 1968, Nom. An. Kor. 2:97, 98(Korea).

*Carabus truncaticollis*(nec Eschscholtz): Cho, 1969, Ill. Encycl. Faun. & Flor. Kor. 10:126, pl.3(8)(N. Korea).

*Eucarabus billbergi putmila*(sic): Lee, 1977, Kor. Journ. Ent. 7(2):38 ⑨-⑩.

Type-locality: U.S.S.R.(E. Siberia).

**Description:** General coloration black or often dark rufous, usually with greenish, bluish, or golden reddish coppery to various metallic luster on dorsum.

Head moderately stout; frontal impressions much deep prominent anteriorly, rather shallow and markedly rugose posteriorly, not exceeding middle of eyes; vertex more or less roundly convex mesally, with punctures somewhat deeper and partially irregular rugosely sculptured posteriorly, usually very obscure transversely grooved to posterior margins of eyes. Mandibles with dorsal surface smooth, often scattered with sparse micropunctures. Maxillary palpi with apical segments gently extending distally, about as long as penultimate segments. Labium with mentum generally lacking setae; median tooth short subtriangularly pointed; labial palpi with apical segments more or less subtriangularly extending distally, apparently shorter than penultimate segments. Submentum generally with a pair or more of gular setae.

Antennae short, usually a little exceeding shoulders of elytra, with 3rd segments slightly compressed laterally; 5th to 9th segments with ventral hairless depressed areas in male.

Pronotum apparently wider than long (ratio, 1:0.65), with 2 lateral setae on each side; anterior margin somewhat arcuately emarginate, obscurely defined linearly; lateral margins broad, neither abruptly raised upwards nor sharply defined, slightly but gentle roundly contracted anteriorly and posteriorly or very slightly sinuate before hind angles; hind angles short, broad subtriangularly produced, a little shorter than half as long as its basal width; basal foveae very shallow, slightly raised at its outside; punctures subrugose, apparently deeper posteriorly.

Elytra markedly short and ovoid, about 1.4 times as long as wide, broadest next to middle, sculpture triploid heterodyname or partially pentaploid; primary intervals catenulate, rather shortly segmented by a series of 9 to 12 foveae which are prominently deep and large, bearing metallic luster; secondaries usually linearly raised, often partly irregularly meandering, sometimes

with transverse striae; tertiaries lower than secondaries, having somewhat transverse striae or often forming a row of connected granules; quaternaries, if present, very irregular and narrower than the preceding 2 intervals, bordered by irregularly spaced punctures with primaries; shoulders rather broad, obtusely rounded. Hind wings subtriangularly atrophied, with membrane thickened.

Chaetotaxy of hind coxae generally bisetose, lacking postero-proximal setae.

Male aedeagus strongly bent distally, with end piece more or less knob-like extending apically; ostium simple, not exceeding half of aedeagal shaft. Endophallus long, bearing laterally with 2 basal lobes and 2 distal lobes in dorsal shape: ligula reduced to an elongate small patch of pigmented granules; copulatory piece stout, produced at middle portion of dorsal wall.

Female genitalia with bursa copulatrix well developed and separated anteriorly. Vaginal apophysis with inner plate rather evenly round, deeply concave along vertical plate. Epivaginal sclerite short, markedly broad laterally.

**Length:** Male 16-17mm, female 17-18mm.

**Locality:** HB : Ch' ōngjin(=Cheong-Jin<sup>⑤</sup>, Chungzin<sup>⑤</sup>, Port Seishien<sup>①</sup>, Port Seishin<sup>②</sup>), Hoeryōng (=Hoe-ryeong<sup>⑩</sup>, Hoeryung<sup>⑥</sup>, Hoirjong<sup>③</sup>), Mt. Paektusan(=Mt. Poik-yek-chan<sup>④</sup>).

HN : Pujōllyōng(=Puzun-ryung<sup>⑧</sup>).

PB : Sakchu(=Sakzu)<sup>⑦</sup>.

**Distribution:** Korea(Northern part), U.S.S.R.(Maritime Territory, S. Siberia), China(Manchuria).

Genus 6. *Lipaster* Motschulsky, 1865      맴시딱정벌레 속

*Lipaster* Motschulsky, 1865, Bull. Soc. Imp. Nat. Mosc. 38:296.

Type-species: *Carabus stjernvalli* Mannerheim, 1830

Type-locality: U.S.S.R. (Armenia).

*Lamprocarabus* Thomson, 1875, Opusc. Ent. 7:639, 673.

Type-species: *Carabus humboldti* Faldermann, 1835

Type-locality: U.S.S.R. (Armenia).

*Titanocechenus* Breuning et Ruspoli, 1970, Entomops. 19:86.

Type-species: *Carabus osellai* Breuning et Ruspoli, 1970

Type-locality: U.S.S.R. (Armenia).

**Diagnosis:** Body generally small to large sized, ovoid to elongate. Coloring black or dark brown, often with strong metallic luster or rarely mat.

Head moderate to strikingly enlarged; frontal impressions moderate, not exceeding middle of eyes, rugose or finely punctulate; vertex more or less flat, somewhat transversely concave to posterior margins of eyes, with punctures deep, subrugose, or sometimes scarce. Mandibles generally short and broad, or rarely elongate, with inner margins more or less straight except apices which are abruptly bent inwards and pointed; dorsal surface usually smooth, sometimes subrugose-punctulate apically. Maxillary palpi moderate, with apical segments about as long as, or shorter than penultimate segments. Labium generally without setae on mentum, with a median tooth short subtriangular; labial palpi moderate, with penultimate segments bisetose or rarely multisetose. Submentum usually flat, with a pair or more of gular setae present. Eyes usually prominent, protruding laterally, or sometimes disproportionately less convex in macrocephalic species.

Antennae short to long, with 2nd segments generally exceeding half as long as 3rd segments; 2nd to 4th segments strikingly to slightly compressed basally; hairy segments in male with ventral hairless areas which often very slightly depressed, or unmodified in both sexes.

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Pronotum wider than long, bisetose to multisetose laterally, with lateral margins broad and gradually raised or narrowly defined; hind angles broad roundly well protrudent, or truncate and not protrudent posteriorly; punctures deep or rather rugulose, fine or sparse; basal foveae moderate to shallow.

Elytra ovoid to markedly elongate, rather flat or strongly convex, with sculpture triploid to pentaploid, heterodynamic or homodynamic; preapical emarginations usually absent or very obscurely rudimental; humeral serrations at lateral margins generally absent. Hind wings strikingly narrowly atrophied.

Chaetotaxy of hind coxae usually trisetose, with postero-proximal setae present. Hind trochanters smooth, without any setiferous pore. Abdomen with transverse sulci usually very weak, broadly interrupted mesally or entirely evanescent, rarely prominently carved.

Male aedeagus with a ligula greatly degenerated into a small patch of pigmented granules; endophallus always with a conspicuous inflation of the membranous wall at dorsal base; copulatory piece entirely absent, only partial sclerotization present or sometimes absent on median portion of dorsal wall where bearing a pair of longitudinal folds; aggonoporial lobe often well developed.

Female genitalia with bursa copulatrix well developed, or often differentiated. Vaginal apophysis with vertical plate moderate to high; inner plate small, but prominent; outer plate slender and strongly narrow.

**Remark:** Ishikawa(1979) recently revised this genus widely based upon the male genitalic character, however, the characteristic features of morphological differences in some group reveal that they evolved sufficiently in taking their taxonomic position as revised here.

Key to subgenera of *Lipaster*

1. Pronotum generally multisetose on each side. Endophallus of male aedeagus with or without lacinia before aggonoporial lobe ..... 2.  
— Pronotum generally bisetose on each side. Endophallus of male aedeagus with a pair of pigmented streaks before aggonoporial lobe where it is not outlined to form a lacinia ..... *Lyperocarabus*
2. Antennae short, slightly exceeding shoulders of elytra. Pronotum with hind angles more or less truncate, not or less protrudent posteriorly. Endophallus with a lacinia before aggonoporial lobe, and with partial sclerotization or pigmented spot on dorsal wall . *Morphocarabus*  
— Antennae slender, often reaching middle of elytra. Pronotum with hind angles roundly well protrudent posteriorly. Endophallus without any sclerite nor partial sclerotization on dorsal wall distally ..... *Leptinocarabus*

Subgenus *Morphocarabus* Géhin, 1876      예쁜딱정벌레 아속

*Morphocarabus* Géhin, 1876, Cat. Col. car. trib. Car.:22.

Type-species: *Carabus monilis* Fabricius, 1792

Type-locality: Europe(Germany).

*Promorphocarabus* Reitter, 1896, Best.-Tab. eur. Col. 34:161.

Type-species: *Carabus gebleri* Fischer, 1817

Type-locality: U.S.S.R. (Siberia).

*Ancylocarabus* Reitter, 1896, Best.-Tab. eur. Col. 34:173.

Type-species: *Carabus tarbagataicus* Kraatz, 1878  
Type-locality: U.S.S.R. (Siberia).

*Gigantocarabus* Semenow, 1898, Hor. Soc. Ent. Ross. 31:536.

Type-species: *Carabus gebleri* Fischer, 1817  
Type-locality: U.S.S.R. (Siberia).

**Diagnosis:** Body generally medium sized. Coloring black, often with strong metallic luster on dorsum.

Head moderately stout; frontal impressions moderate, not reaching middle of eyes, somewhat rugose posteriorly; vertex more or less flat, somewhat transversely concave to posterior margins of eyes, with punctures deep sparse or rugose laterally. Mandibles generally stout and broad, with inner margins more or less straight except apices which are abruptly bent inwards and pointed; dorsal surface usually smooth. Maxillary palpi with apical segments about as long as, or shorter than penultimate segments. Labium generally without setae on mentum, with a median tooth short subtriangular; labial palpi with penultimate segments bisetose. Submentum usually flat, with a pair or more of gular setae present. Eyes usually prominent, well protrudent laterally.

Antennae comparatively short, not reaching one-third of elytra, with 2nd to 4th segments slightly compressed basally; hairy segments with ventral hairless areas in male.

Pronotum wider than long, multisetose laterally, with lateral margins more or less narrowly defined or broad and gradually raised; hind angles rather truncate, or broad roundly protrudent posteriorly; punctures deep, often sparse or sometimes fine; basal foveae small to moderate.

Elytra ovoid to elongate oval, strongly but evenly convex mesally; sculpture usually triploid, heterodyname or homodyname; secondary intervals linearly costate or interrupted frequently, sometimes with all the intervals interrupted frequently; preapical emarginations usually absent; shoulders comparatively narrow, less protrudently rounded, or sometimes broad and protrudent.

Chaetotaxy of hind coxae trisetose, with postero-proximal setae generally present. Abdomen with transverse sulci usually evanescent or only carved laterally.

Male aedeagus roundly to abruptly bent at base, with median portion rather straight, and with end piece bent at base; ostium usually short, not lobate basally. Endophallus very long, without copulatory piece, only with a small sclerite or lacinia between apophyseal lobe and partial sclerotization on dorsal wall where bearing a longitudinal fold on each side; aggonoporial lobe generally well developed.

**Remark:** Breuning(1932) synonymized this genus under *Eucarabus* Géhin, 1876, in his broad sense but too superficial, nevertheless the present subgenus is valid apparently as Isikawa (loc. cit.) extensively revised mainly based upon the examination of male genitalia of various components of *Lipaster* Motschulsky, 1865.

The detailed male genitalic structure of *Morphocarabus mongolorum* Csiki, 1927 has not known to the authors, whether it also share the common character for this subgenus or not, thus its exact taxonomic placement is uncertain yet.

### 13. *Lipaster* (*Morphocarabus*) *hummeli* (Fischer, 1824) 참예쁜딱정벌레 (금대늑딱정벌레)

*Carabus Hummeli* Fischer, 1824, Ent. Imp. Russ. 2:69, pl. 35(8).

Type-locality: U.S.S.R. (E. Siberia: Nertschinsk).

The nominate subspecies is represented from Eastern Siberia, but its actual geographical range is still not fully revised and thus it may be split into several local races which including some

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resurgence for those previously ceased into the synonymy, according to the progress for exploring this group. But tentatively it may be separable from the following subspecies by the body shape in being more broader pronotum and elytra.

13-1. *Lipaster (Morphocarabus) hummeli tristiculus* (Kraatz, 1878)

예쁜이딱정벌레 (금태록색딱정벌레붙이, 예쁜이줄 딱정벌레)

*Carabus hummeli* var. *tristiculus* Kraatz, 1878, Deutsch. Ent. Zeitschr. 22:249.

*Carabus* (*Carabus* Sect. *Eucarabus*) *hummeli* m. *tristicula*: Breuning, 1932, Best.-Tab. eur. Col. 104:274-275 <sup>①-②</sup>

*Eucarabus hummeli*: Beheim et Breuning, 1943, Mitt. Münchn. Eng. Ges. 33(1):7 <sup>③</sup>.

*Carabus hummeli* + *C. h. tristicula*: Cho, 1957, Hum, & Sci., Nat. Sci. Kor. Univ. 2:180(Korea).

*Carabus hummeli*(partim) + *C. h. tristicula*: Cho, 1963b, Journ. Nat. Acad. Sci. Rep. Kor. Nat. Sci. Ser. 4:82-83 <sup>④</sup>.

*Carabus hummeli* + *C. h. tristicula*: Zool. Soc. Kor., 1968, Nom. An. Kor. 2:97(Korea).

*Morphocarabus hummeli*: Ishikawa, 1973, Bull. Nat. Sci. Mus. Tokyo. 16(2): 212, 214.

*Eucarabus hummeli tristicula*: Lee, 1977, Kor. Journ. Ent. 7(2):37 <sup>①, ⑤</sup>.

*Lipaster (Morphocarabus) hummeli*: Ishikawa, 1979, Bull. Nat. Sci. Mus. Ser. A (Zool.). 5(2): 104-105.

Type-locality: U.S.S.R. (Maritime Territory).

**Description:** General coloration black, usually with various metallic luster on dorsum, for example, greenish, bluish, or golden reddish coppery to dark.

Head moderately stout: frontal impressions deep anteriorly, not exceeding anterior margin of eyes, rather rugulose posteriorly; vertex somewhat flat mesally, slightly convex anteriorly between frontal impressions, usually obscurely transversely grooved to posterior margins of eyes, with punctures comparatively deep coarse or partly subrugose. Mandibles with dorsal surface smooth, often scattered with sparse microsculptures. Maxillary palpi with apical segments gently extending distally, subobliquely truncate, slightly shorter than penultimate segments (ratio, 1:1.15). Labium with mentum generally lacking setae; median tooth short subtriangularly pointed; labial palpi with apical segments extending distally, obliquely truncate, apparently shorter than penultimate segments (ratio, 1:1.5). Submentum usually with a pair of gular setae.

Antennae short, not reaching one-third of elytra even in male; 6th to 10th segments with ventral hairless deep depressed areas in male, but that of 6th is very slight.

Pronotum wider than long (ratio, 1:0.84), strongly convex mesally, with 3 to 5 lateral setae on each side; anterior margin very slightly emarginate mesally, broad linearly well defined; lateral margins very narrow and sharply defined, round gently contracted anteriorly, evenly sinuate before hind angles; hind angles more or less subrectangular, truncate, not protrudent posteriorly, inclined downwards; basal foveae slightly deep round; punctures deep prominent, coarsely distributed.

Elytra elongate oval, strongly convex, broadest behind middle, with shoulders comparatively narrow and somewhat roundly continuous to lateral margins; sculpture triploid homodyname; primary intervals segmented by a series of 12 to 15 small foveae; secondaries and tertiaries interrupted frequently by transverse striae. Hind wings very narrow and elongately atrophied.

Chaetotaxy of hind coxae usually trisetose, with postero-proximal setae present.

Male aedeagus abruptly bent at base, with median portion rather straight, and with end piece bent and slightly twisted rightwards which is broad mesally and gently narrowed apically; ostium very short and simple; endophallus very long, with a ligula greatly reduced to a small patch of pigmented granules at dorsal base; copulatory piece not developed, but with a small somewhat

papilla-like lacinia between well developed aggonoporial lobe and elongate partial sclerotization on dorsal wall, where bearing a longitudinal fold on each side.

**Length:** Male 20-23mm, female 23-25mm.

**Locality:** HB : Hoeryŏng (=Hoe-Ryeong<sup>⑤</sup>, Hoeryung<sup>④</sup>, Hoirjong<sup>②</sup>), Mt. Paektusan (=Mt. Paik-yek-Chan<sup>①</sup>, Mts. Paik-yet-Shan<sup>③</sup>).

**Distribution:** Korea, China(Manchuria), U.S.S.R. (Maritime Territory, E. Siberia).

Subgenus *Leptinocarabus* Reitter, 1895

에기맴시딱정벌레 아속

*Leptinocarabus* Reitter, 1895, Wien. Ent. Zeit. 14(4):108.

Type-species: *Carabus wulffiusi* Morawitz, 1862

Type-locality: U.S.S.R. (Maritime Territory).

**Diagnosis:** Body generally small to medium sized. Coloring black or sometimes dark brown, often with greenish to coppery luster on lateral marginal areas of elytra.

Head moderate, frontal impressions moderate, not reaching middle of eyes, slightly to strongly rugose posteriorly; vertex more or less flat or rather convex anteriorly, somewhat transversely concave to posterior margins of eyes, with punctures weak to deep sparse or strongly rugose. Mandibles generally stout and broad, with inner margins more or less straight except apices which are abruptly bent inwards and pointed; dorsal surface usually smooth. Labrum deeply emarginate mesally, broad roundly protrudent antero-laterally. Maxillary palpi with apical segments about as long as penultimate segments. Labium generally without setae on mentum, with a median tooth short subtriangular; labial palpi with penultimate segments bisetose. Submentum usually flat, with a pair or more of gular setae present. Eyes generally prominent, well protrudent laterally.

Antennae generally long slender, reaching middle of elytra in male, with 2nd to 3rd or 4th segments slightly compressed basally; hairy segments with ventral hairless areas in male.

Pronotum slightly to prominently wider than long, multisetose laterally, with lateral margins comparatively narrow and well carinate, gently sinuate before hind angles; hind angles prominent, well developed posteriorly; punctures strongly deep, somewhat rugose or weakly sculptured; basal foveae small.

Elytra elongate oval to elongate; sculpture triploid to pentaploid heterodyname, often partly scattered with granules; preapical emarginations generally evanescent; shoulders moderate roundly protrudent. Hind wings very narrow and elongately atrophied.

Chaetotaxy of hind coxae trisetose, with postero-proximal setae generally present. Abdomen with transverse sulci evanescent or weakly carved laterally.

Male aedeagus gently arcuate mesally, with end piece rather broad, roundly terminated; ostium comparatively short, not lobate at base. Endophallus very long, without any sclerite nor partial sclerotization on dorsal wall where bearing a longitudinal fold on each side; aggonoporial lobe well developed.

Female genitalia with bursa copulatrix strikingly developed. Vaginal apophysis with inner plate small but prominent; outer plate strongly narrow.

**Remark:** Ishikawa (loc. cit.) placed the present subgenus under the synonymy of *Morphocarabus* Géhin, 1876 in wide sense, but this subgenus is apparently separated from the latter by the absence of both lacinia and pigmented spot or partial sclerotization on dorsal wall of endophallus.

14. *Lipaster (Leptinocarabus) wulffiusi* Morawitz, 1862 애기뎃시 딱정벌레 (새줄혹집박이 딱정벌레)

*Carabus Wulffiusi* Morawitz, 1862, Bull. Acad. Sci. Pet. 5:192.

**Type-locality:** U.S.S.R. (Maritime Territory).

**Description:** General coloration black or sometimes dark rufous brown on under side; elytra usually mat, with greenish to golden coppery luster on each lateral-marginal area.

Head moderately stout posteriorly; frontal impressions deep and somewhat subdivergent anteriorly, shallow broadly concave and slightly to strongly rugose posteriorly, not reaching middle of eyes. Vertex more or less flat, slightly convex anteriorly between frontal impressions, somewhat transversely concave to posterior margins of eyes, with punctures weak to deep sparse or strongly rugose. Mandibles with dorsal surface smooth. Maxillary palpi comparatively slender, with apical segments gently extending distally, about as long as penultimate segments. Labium with mentum generally lacking setae; median tooth short subtriangular; labial palpi with apical segments gently extending distally, apparently shorter than penultimate segments (ratio, 1:1.2-1.4). Submentum generally with a pair or 2 pairs of gular setae.

Antennae slender, usually exceeding middle of elytra in male, 7th to 9th segments with ventral hairless areas in male.

Pronotum wider than long (ratio, 1: 0.7-0.85), rather flat mesally, with 4 to 5 lateral setae on each side; anterior margins slightly emarginate mesally, linearly defined; lateral margins comparatively narrow and well carinate, roundly contracted anteriorly and gently sinuate before hind angles; hind angles broad roundly well protrudent posteriorly, rather horizontal; punctures moderate to strongly deep, rugose or weakly sculptured.

Elytra elongate oval to elongate, slightly to strongly convex mesally, broadest behind middle, with sculpture triploid to pentaploid heterodyname, strongly to weakly striated; intervals often somewhat subirregularly interrupted, and sometimes partially bearing microgranules; primaries with foveae bearing greenish to coppery luster. Hind wings strikingly narrowly atrophied.

Chaetotaxy of hind coxae generally trisetose, with postero-proximal setae present.

Male aedeagus gently arcuate, oblique carina present or absent on right ventral side distally; end piece broad and spatulate, deep roundly terminated. Endophallus fairly long, without any sclerite nor partial sclerotization on dorsal wall, only bearing a pair of longitudinal folds distal to mesally; aggonoporial lobe well developed; ligula greatly degenerated into a small patch of pigmented granules; basal lateral lobes asymmetrical.

Female genitalia with bursa copulatrix well developed. Vaginal apophysis with inner plate rather broad; outer plate strikingly narrow. Epivaginal pocket prominently differentiated or not developed.

**Length:** Male 17-21mm, female 19-23mm.

**Distribution:** Korea, U.S.S.R. (Maritime Territory), China (Manchuria).

**Remark:** Breuning (1932) selected *Carabus venustus* Morawitz, 1862, which was described from Mts. Bureja, Amur, U.S.S.R., as the nominate one for this species, but the former name was already placed into one of the geographical races or subspecific status within *Carabus wulffiusi* Morawitz, 1862.

**Key to subspecies of *Lipaster (Leptinocarabus) wulffiusi***

1. Body generally elongate oval. Elytra strongly convex mesally, with all the intervals sharply sculptured . . . . . 2.

- Body generally markedly elongate oval. Elytra more or less convex mesally, with all the intervals less sharply sculptured . . . . . 3.
- 2 Head and pronotum less deep compactly punctured and rugulose. Elytra with primary and tertiary intervals almost samely segmented by a series of large foveae. Male aedeagus with an oblique carina on right ventral side of distal portion . . . . .  
*Lipaster (Leptinocarabus) wulffiussi wulffiussi*
- Head and pronotum very deep compactly punctured and rugulose. Primary intervals not samely segmented with secondaries. Secondaries often frequently interrupted. Female epivaginal pocket not developed . . . . .  
*Lipaster (Leptinocarabus) wulffiussi ssangnamensis* subsp. nov.
- 3. Elytra with sculpture comparatively prominent; tertiaries usually not microgranulose. Male aedeagus with aggonoporial lobe rather compactly sclerotized laterally . . . . .  
*Lipaster (Leptinocarabus) wulffiussi alpinus* subsp. nov.
- Elytra with sculpture comparatively shallowly carved; tertiaries bearing microgranules. Male aedeagus with aggonoporial lobe rather broad, deeply concave on each side in dorsal shape . . . . .  
*Lipaster (Leptinocarabus) wulffiussi opacipennis*

#### 14-1. *Lipaster (Leptinocarabus) wulffiussi wulffiussi* (Morawitz, 1862)

애기뿔시 딱정벌레 (새화령딱정벌레, 애화령딱정벌레 화령딱정벌레, 북방애기뿔딱정벌레)

*Carabus Wulffiussi* Morawitz, 1862, Bull. Acad. Sci. Pet. 5:192.

*Carabus venustus* Morawitz, 1862, Ibid. 5:193.

*Carabus (Carabus Sect. Leptinocarabus) cyaneoviolaceus* var. *Wulffiussi*: Csiki, 1927, Col. Cat. 91:267 (Korea).

*Carabus (Carabus Sect. Eucarabus) venustus* n. *venustus* + *C. (C. S. E.) v. n. ab. wulffiussi*: Breuning, 1932, Best.-Tab. eur. Col. 104:268-269 <sup>①-②</sup>.

*Leptinocarabus cyaneoviolaceus* var. *wulffiussi*: Cho, 1934, Journ. Chos. Nat. Hist. Soc. 17:84 <sup>③</sup>.

*Carabus (Leptinocarabus) cyaneoviolaceus wulffiussi* (sic): Yano, 1941, Nipp. Koch. 4(1):20 <sup>④</sup>.

*Carabus venustus*: Cho, 1957, Hum. & Sci., Nat. Sci. Kor. Univ. 2:179 (Korea).

*Carabus venustus* + *C. v. wulffiussi*: Cho, 1963b, Journ. Nat. Acad. Sci. Rep. Kor. Nat. Sci. Ser. 4:82 <sup>⑤-⑨</sup>.

*Carabus venustus* + *C. v. wulffiussi* (sic): Zool. Soc. Kor., 1968, Nom. An. Kor. 2:97 (Korea).

*Carabus wulffiussi*: Cho, 1969, Ill. Encycl. Faun. & Flor. Kor. 10:129, pl. 4(14) (N. Korea).

*Eucarabus venustus venustus*: Lee, 1977, Kor. Journ. Ent. 7(2):37 <sup>⑩-⑪</sup>.

*Lipaster (Morphocarabus) wulffiussi*: Ishikawa, 1979, Bull. Nat. Sci. Mus. Ser. A (Zool.). 5(2): 104-105.

**Type-locality:** U.S.S.R. (Maritime Territory).

**Description:** Body generally elongate oval. Vertex markedly rugose. Pronotum slightly wider than long (ratio, 1:0.8), deeply punctured.

Elytra strongly convex mesally, with sculpture pentaploid heterodyname, deeply striated; primary and tertiary intervals almost samely segmented by a series of 11 to 13 large deep foveae; quaternaries often very narrow and irregularly present, or partially evanescent.

Male aedeagus with an oblique carina on right ventral side of distal portion. Endophallus with left basal lobe swollen upwards in dorsal view.

**Length:** Male 18-20mm, female 19-22mm.

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Locality: GW : Mt. Kŭmgangsan (=Kumkang-san<sup>⑧</sup>).

HB : Ch'ongjin (=Cheong-Jin<sup>⑪</sup>, Chungzin<sup>⑤</sup>, Seishin<sup>②</sup>), Hoeryŏng (=Hoe-Ryeong<sup>⑩</sup>, Hoeryung<sup>⑥</sup>, Hoirjong<sup>①</sup>), Mt. Kwanmobong<sup>③</sup> (=Kwanmo-san<sup>⑨</sup>), Mt. Mayisan (=Mt. Baji<sup>④</sup>).

PB : Huch'ang (=Fuchang<sup>⑦</sup>).

Distribution: Korea, U.S.S.R. (Maritime Territory).

14-2. *Lipaster (Leptinocarabus) wulffiussi ssangnamensis* Kwon et Lee, subsp. nov. 양남댁시막정벌레

**Description:** Body generally elongate oval. Vertex deep strongly punctulate around posterior end of frontal impressions.

Pronotum wider than long (ratio, 1:0.76), rather flat, deep strongly subrugosely punctulate, widest before middle, with lateral margins narrow, prominently but gently sinuate before hind angles.

Elytra strongly convex mesally, with sculpture part; ally pentaploid heterodyname, rather irregular and deeply grooved; secondary intervals much frequently interrupted than other intervals.

Female genitalia with epivaginal pocket not developed; vaginal apophysis with inner plate very broad and roundly terminated anteriorly.

**Length:** Female 21mm.

**Type-examined:** Holotype female, Ssangnamdong, Huch'ang, PB, N. Korea, 14, VII, 1937, coll. S.M. Lee.

**Remark:** This new subspecies is allied to the nominate one but easily separated from it by the external sculpture on elytra.

14-3. *Lipaster (Leptinocarabus) wulffiussi alpinus* Kwon et Lee, subsp. nov. 산애기댁시막정벌레

*Eucarabus venustus opacipennis* (partim): Lee, 1977, Kor. Journ. Ent. 7(2):37<sup>①</sup>.

**Description:** Body generally elongate. Vertex rugosely punctulate. Pronotum wider than long (ratio, 1: 0.79-0.85), deep rugosely punctulate.

Elytra rather elongate, gently convex mesally, with sculpture triploid or partially pentaploid; secondary intervals usually somewhat linearly costate and less interrupted, except apical portions which are frequently segmented.

Male aedeagus simple on ventral right side of distal portion; endophallus with aggonoporial lobe stoutly sclerotized on either side.

Female genitalia with epivaginal pocket well developed; vaginal apophysis with inner plate large broad, deep roundly terminated anteriorly.

**Length:** Male 20-21mm, female 23mm.

**Type-examined:** Holotype male, Mt. T'aebaeksan, GW, C. Korea, 27, VI, 1976, coll. S.M. Lee; paratypes: 1 female, same data as holotype; 1 male, the same locality, 19, VI, 1983, coll. S.M. Lee.

**Locality:** GW : Mt. T'aebaeksan (=Mt. Tae-Baeg<sup>①</sup>).

**Remark:** The present new subspecies shares seemingly somewhat intermediate characters between the nominate one and subsp. *opacipennis* Reitter, 1895, in external feature, but separated from them by the male genitalic structure.

14-4. *Lipaster (Leptinocarabus) wulffiussi opacipennis* (Reitter, 1895)

(간해기령시 딱정벌레 (구리 및 딱정벌레, 최령 딱정벌레붙이, 애기속 딱정벌레.)

- Carabus van-volxemi* (nec Putzeys): Bates, 1888, Proc. Zool. Soc. Lond.:368<sup>(1)</sup>.  
*Carabus (Leptinocarabus) Wulffinsi opacipennis* (sic) Reitter, 1895, Wien. Ent. Zeit. 14(4):108 (Korea).  
*Carabus Van-Volxemi* (nec Putzeys): Kano, 1923, Ins. World. 27(315):379<sup>(2)</sup>.  
*Carabus Van-Volxemi* (nec Putzeys): Kano, 1924, Ibid. 28(326):348 (Korea).  
*Leptocarabus (Leptinocarabus) wulffiussi opacipennis*: Lapouge, 1931, Gen. Ins. 192:593 (Corée).  
*Carabus (Carabus Sect. Eucarabus) venustus n. opacipennis*: Breuning, 1932, Best.-Tab. eur. Col. 104:269<sup>(1)</sup>.  
*Carabus (Carabus Sect. Leptinocarabus) cyaneoviolaceus* var. *wulffiussi* (nec Morawitz): Wu, 1937, Cat. Ins. Sin. 3:63-64 (Korea).  
*Carabus (Ohmopterus) vanvolxemi* (sic et nec Putzeys): Yano, 1941, Nipp. Koch. 4(1):18-19 (Corea).  
*Carabus venustus opacipennis* + *C. van-volxemi* (nec Putzeys): Cho, 1957, Hum. & Sci., Nat. Sci. Kor. Univ. 2:179, 181 (Korea).  
*Carabus venustus opacipennis* + *C. van-volxemi* (partim et nec Putzeys): Cho, 1963b, Journ. Nat. Acad. Sci. Rep. Kor. Nat. Sci. Ser. 4:82<sup>(3)</sup>.  
*Carabus venustus opacipennis* + *C. van-volxemi* (nec Putzeys): Zool. Soc. Kor., 1968, Nom. An. Kor. 2:97 (Korea).  
*Eucarabus venustus opacipennis* (partim): Lee, 1977, Kor. Journ. Ent. 7(2): 37<sup>(4)-(11)</sup>.  
*Eucarabus venustus opacipennis*: Yoon et Nam, 1980, Bas. Plan Constr. Nat. Stud. Kyōngg. Prov.:38<sup>(12)</sup>.

Type-locality: Korea (Central part ?).

**Description:** Body generally elongate. Vertex often fine subrugosely punctulate. Pronotum slightly wider than long, ratio variable, with punctures comparatively prominent subrugulose; basal foveae small, deep round, somewhat extending transversely rather subparallel to posterior margin of pronotum.

Elytra elongate and rather convex mesally, with apex subacutely producing in female; preapical emarginations vestigial; sculpture triploid or rarely pentaploid heterodyname; secondary intervals often samely costate as primaries or lower; tertiaries and quaternaries vestigial or sometimes tertiaries very slightly raised, usually scattered with numerous microgranules.

Male aedeagus simple, not carinate on ventral right side of distal portion; endophallus with aggonoporial lobe rather broad, deeply concave on each middle to basal lateral portion.

Female genitalia with epivaginal pocket well developed; vaginal apophysis with inner plate slightly narrowed anteriorly.

**Length:** Male 17-21mm, female 19-23mm.

**Locality:** GG : Mt. Ch'ōnmasan (=Mt. Cheon-Ma<sup>(13)</sup>), Mt. Myōngjisan<sup>(12)</sup> (=Mt. Myeong-Ji<sup>(8)</sup>), Seoul (=O-Ryu-Dong<sup>(1)</sup>), Mt. Tōgamsan (=Mt. Deog-Am<sup>(9)</sup>).  
 GW : Mt. Ch'iaksan (=Mt. Chi-Ag<sup>(7)</sup>), Mt. Odaesan (=Mt. O-Dae<sup>(6)</sup>), Mt. Pangdaesan (=Mt. Bang-Dae<sup>(5)</sup>), Mt. Sōlaksan (=Mt. Seol-Ag<sup>(4)</sup>).  
 HN : Wōnsan<sup>(2)</sup> (=Gensan<sup>(1)</sup>, Wonsan<sup>(3)</sup>).

**Distribution:** Korea (Central part).

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Subgenus *Lyperocarabus* Lapouge, 1930

넓적딱정벌레 아속

*Lyperocarabus* Lapouge, 1930, Gen. Ins. 192:271-272.

Type-species: *Carabus estreicheri* Fischer, 1822

Type-locality: U.S.S.R. (European part: Proskurow).

**Diagnosis:** Body ovoid to elongate oval, small to medium sized. Coloring black, often with metallic luster or somewhat mat.

Head moderately stout; frontal impressions deep prominent, reaching anterior margins of eyes; vertex somewhat flat, rather prominently punctulate. Mandibles generally stout and broad, with inner margins more or less straight except apices which are abruptly bent inwards and pointed; dorsal surface usually smooth. Maxillary palpi moderate, with apical segments slightly shorter or about as long as penultimate segments. Labium generally without setae on mentum; median tooth short subtriangular, about as long as its lateral lobes; labial palpi with penultimate segments bisetose. Submentum rather flat, generally with a pair or more of gular setae present. Eyes well prominent, protruding laterally.

Antennae slender, usually reaching one-third to middle of elytra, with 2nd segments a little exceeding half of 3rd segments, both more or less cylindrical, and 3rd segments often slightly compressed at base; hairy segments with ventral hairless areas in male.

Pronotum wider than long, with 2 lateral setae on each side; lateral margins broad, not sharply defined, roundly contracted anteriorly and posteriorly, or very slightly gradually sinuate before hind angles; hind angles well developed, broad subtriangularly protrudent; anterior margins sharply linearly defined; basal foveae usually shallow; punctures rather deep prominent.

Elytra ovoid to elongate oval, with shoulders comparatively broad and obtusely protrudent; sculpture triploid heterodyname, surface often finely granulose or partially with transverse striae; primaries catenulate or frequently segmented; often slightly broader and higher than other intervals; tertiaries often less raised, or rarely evanescent.

Chaetotaxy of hind coxae generally trisetose, with postero-proximal setae absent. Abdomen with transverse sulci weak to prominent.

Male aedeagus moderately broad, roundly curved distally; endophallus with a pair of pigmented streaks near apex of dorsal wall where it is not outlined to form a lacinia; copulatory piece entirely not developed; partial sclerotization or pigmented spot absent on middle of dorsal wall.

**Remark:** Breuning (1933) treated this subgenus as a junior synonym of *Trachycarabus* Géhin, 1876 sensu lato, but his taxa are too inclusive and heterogeneous to put the components in phylogenetic order, so it would be more reasonable to place the present subgenus into the valid position provisionally as treated by Ishikawa (loc. cit), till further studies based on the male and female genitalic structure of these group.

15. *Lipaster (Lyperocarabus) latreillei* (Fischer, 1822)

넓적딱정벌레

*Carabus Latreillei* Fischer, 1822, Ent. Imp. Ross. 1:29, pl.4(10a,b).

Type-locality: U.S.S.R. (E. Siberia).

**Description:** General coloration black; dorsum slightly to strongly polished in male, usually mat in female.

Head moderately stout; frontal impressions deep, usually reaching anterior margins of eyes; vertex more or less flat, with punctures rather deep and partially irregular rugosely sculptured posteriorly. Mandibles with dorsal surface smooth. Maxillary palpi with apical segments slightly extending distally, about as long as penultimate segments. Labium with mentum generally lacking

setae; median tooth short subtriangular, about as long as its lateral lobes; labial palpi with apical segments extending distally, apparently shorter than penultimate segments. Submentum generally with a pair or more of gular setae present.

Antennae long, reaching middle of elytra in male; hairy segments dark rufous, 5th to 9th segments with ventral hairless depressed areas in male.

Pronotum wider than long (ratio, 1: 0.67-0.8), widest near middle, with 2 lateral setae on each side; anterior margins somewhat arcuately emarginate, linearly defined; lateral margins broadly bordered, not highly raised upwards, gentle roundly contracted anteriorly and posteriorly, or slightly gradually sinuate before hind angles; hind angles broad subtriangular, well protrudent posteriorly; basal foveae shallow and somewhat round; punctures fine, rather deeper posteriorly.

Elytra rather narrow, or elongate oval, with surface somewhat finely granulose or often with transverse striae over all the intervals; primary intervals a little wider and more raised than others, frequently interrupted; shoulders broad, rather obtusely protrudent.

Abdomen with transverse sulci weakly carved, somewhat interrupted mesally. Fore tibiae in male strongly swollen. Hind tibiae setose distally.

Male aedeagus moderately broad, markedly arcuate distally, with end piece broad and gentle roundly terminated. Endophallus with copulatory piece not developed on its dorsal wall.

**Remark:** This species has been poorly known since revision of Breuning's (1933), thus it contains many uncertainties with inadequacies pertaining to its intraspecific groupings and treated here tentatively after his philosophy till obtaining of extensive material.

#### Key to subspecies of *Lipaster (Lyperocarabus) latreillei*

1. Elytra with all the intervals interrupted transversely; primaries irregularly frequently segmented ..... 2.
  - Elytra with all the intervals finely granulose, not interrupted; primaries rather elongately segmented ..... *Lipaster (Lyperocarabus) latreillei semicoriaceus*
2. Elytral sculpture usually low. Smaller sized, about 21-25mm in length .....
  - Elytral sculpture comparatively more flat. Larger sized, about 26-29mm in length ..... *Lipaster (Lyperocarabus) latreillei inchanicus*
  - Elytral sculpture comparatively more flat. Larger sized, about 26-29mm in length ..... *Lipaster (Lyperocarabus) latreillei mandschurensis*

#### 15-1. *Lipaster (Lyperocarabus) latreillei inchanicus* (Lapouge, 1916)

몽고넓적막정벌레 (몽고막정벌레)

*Carabus mannerheimi inchanicus* Lapouge, 1916, Misc. Ent. 24:90.

*Carabus (Carabus Sect. Trachycarabus) latreillei latreillei m. inchanica*: Breuning, 1933, Best.-Tab. eur. Col. 106:510 <sup>①-②</sup>

*Carabus latreillei inshanica* (sic): Cho, 1957, Hum. & Sci., Nat. Sci. Kor. Univ. 2:180 (Korea).

*Carabus latreillei inshanica* (sic): Cho, 1963b, Journ. Nat. Acad. Sci. Rep. Kor. Nat. Sci. Ser. 4:84 <sup>③-④</sup>

*Carabus latreillei inshanica* (sic): Zool. Soc. Kor., 1968, Nom. An. Kor. 2:97 (Korea).

*Trachycarabus latreillei inshanica* (sic): Lee, 1977, Kor. Journ. Ent. 7(2):38 <sup>⑤-⑥</sup>

**Type-locality:** Mongolia (Inchan).

**Locality:** HB : Ch'ongjin (=Cheong-Jin <sup>⑥</sup>, Chungzin <sup>④</sup>, Seishin <sup>②</sup>), Hoeryŏng (=Hoe-Ryeong <sup>⑤</sup>, Hoeryung <sup>③</sup>, Hoirjong <sup>①</sup>).

**Distribution:** Korea, China (Manchuria), Mongolia, U.S.S.R. (Maritime Territory).

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15-2. *Lipaster (Lyperocarabus) latreillei mandschurensis* (Breuning, 1926) 만주늑막정벌레 (만주막정벌레)

*Carabus mannerheimi mandschurensis* Breuning, 1926, Kol. Rundsch. 12:72.

*Carabus (Carabus Sect. Trachycarabus) latreillei m. mandschurensis*: Breuning, 1933, Best.-Tab. eur. Col. 106:510-511 <sup>①-②</sup>.

*Carabus (Trachycarabus) mannerheimi*: Yano, 1941, Nipp. Koch. 4(1):20 <sup>①</sup>.

*Carabus latreillei mandschurensis*: Cho, 1957, Hum. & Sci., Nat. Sci. Kor. Univ. 2:180 (Korea).

*Carabus latreillei mandschurensis*: Cho, 1963b, Journ. Nat. Acad. Sci. Rep. Kor. Nat. Sci. Ser. 4:84 <sup>③-④</sup>.

*Carabus latreillei mandschurensis*: Zool. Soc. Kor., 1968, Nom. An. Kor. 2:98 (Korea).

*Trachycarabus latreillei mandschurensis*: Lee, 1977, Kor. Journ. Ent. 7(2):38 <sup>⑤-⑥</sup>.

Type-Localities: China (Manchuria: Mukden).

Locality: HB : Ch'ongjin (=Cheong-Jin <sup>⑥</sup>, Chungzin <sup>④</sup>, Seishin <sup>①</sup>), Hoeryong (=Hoe-Kyeong <sup>⑤</sup>, Hoeryung <sup>③</sup>, Hoirjong <sup>②</sup>).

Distribution: Korea, China (Manchuria), U.S.S.R. (Maritime Territory).

15-3. *Lipaster (Lyperocarabus) latreillei semicoriaceus* (Kraatz, 1881) 평양늑막정벌레 (평양막정벌레)

*Carabus semicoriaceus* Kraatz, 1881, Deutsch. Ent. Zeitschr. 25:266.

*Carabus (Carabus Sect. Trachycarabus) latreillei semicoriaceus*: Breuning, 1933, Best.-Tab. eur. Col. 106:511 <sup>①</sup>.

*Carabus latreillei semicoriaceus* (sic): Cho, 1957, Hum. & Sci., Nat. Sci. Kor. Univ. 2:181 (Korea).

*Carabus latreillei semicoriaceus*: Cho, 1963b, Journ. Nat. Acad. Sci. Rep. Kor. Nat. Sci. Ser. 4:84 <sup>②</sup>.

*Carabus latreillei semicoriaceus*: Zool. Soc. Kor., 1968, Nom. An. Kor. 2:98 (Korea).

*Eucarabus latreillei semicoriaceus*: Lee, 1977, Kor. Journ. Ent. 7(2):38 <sup>①</sup>.

Type-locality: China (Manchuria: Liaotung).

Locality: PN : P'yongyang (=Pingan <sup>①</sup>, Pyungyang <sup>②</sup>).

Distribution: Korea, China (Manchuria).

Group *Multistriati* Reitter, 1896 (sensu Ishikawa, 1978) 줄막정벌레 군

Diagnosis: Male aedeagus with ostium generally lobate at its basal area, very rarely simple. Endophallus with a ligula greatly reduced or lacking altogether; copulatory piece entirely absent.

Larvae: Mandibles long or broad, and stout basally, with retinacula comparatively large. Epistoma often quadridentate or rostriform.

Genus 8. *Leptocarabus* Géhin, 1885 줄막정벌레 속

*Leptocarabus* Géhin, 1885, Cat. syn. & syst. Col. Tib. Car.: 36.

Type-species: *Carabus procerulus* Chaudoir, 1862

Type-locality: Japan.

**Diagnosis:** Body generally small to large sized. Coloring black or sometimes dark rufous to dark brown, often lacking metallic luster, mat or sometimes polished at lateral margins.

Head moderate to a little stout; frontal impressions prominent, smooth, rugose or finely punctulate; vertex more or less flat, or slightly convex mesally, somewhat transversely concave to posterior margins of eyes; punctures variable. Mandibles generally short and broad, with inner margins more or less straight except apices which are abruptly bent inwards and pointed; dorsal surface usually smooth. Maxillary palpi moderate, with apical segments about as long as, or shorter than penultimate segments. Labium generally without setae on mentum, with a medium tooth short subtriangular; labial palpi moderate, with penultimate segments bisetose. Submentum usually flat, with gular setae present or entirely absent. Eyes usually prominent, protruding well laterally.

Antennae short to long, with 2nd segments generally exceeding half as long as 3rd segments; the latter usually slightly compressed basally; hairy segments with ventral hairless areas in male, or simple in both sexes.

Pronotum wider than long, or rarely as long as wide, bisetose to multisetose laterally, with lateral margins broad and gradually raised or narrow and sharply defined; hind angles broad roundly to subacutely protrudent posteriorly; punctures weak to deep; basal foveae deep to shallow.

Elytra markedly elongate to ovoid, rather flat or strongly convex, with sculpture triploid to pentaploid, heterodyname; primary intervals more or less sharp linearly carinate or interrupted frequently; secondaries and tertiaries much weaker than primaries or markedly degenerated; preapical emarginations usually absent or very obscurely rudimental; humeral serrations at lateral margins generally absent. Hind wings narrowly atrophied.

Hind coxae bisetose to trisetose. Hind trochanters smooth; without any setiferous pore. Abdomen with transverse sulci sharply carved to evanescent.

Male aedeagus with end piece broad roundly to sharply terminated. Ostium simple or lobate at basal area. Endophallus short, with a ligula greatly degenerated into a small sclerite or patch of pigmented granules; copulatory piece entirely absent.

Female genitalia with bursa copulatrix well developed, but not separated. Vaginal apophysis with inner plate usually small; outer plate often broad oval.

**Remark:** The nominate subgenus *Leptocarabus* G hin, 1885 is indeed endemic to Honshu, Japan, apparently not represents in Hokkaido and the continental Far East Asia, and is characterized by the absence of gular setae and anterior seate of hind coxae from other subgenera of the genus. Previous records on *Leptocarabus* (s. str.) *procerulus* (Chaudoir, 1862) in the Korean Peninsula was due to the misidentification or in reality one of the intended error, as shown in the preceding historical review. The authors also examined and compared the intentional material recorded as "Haezu" with several specimens of the nominate subspecies from various areas of Honshu, Japan (Pref. Kanagawa, Yamanashi, Osaka, Tochigi, Tokyo), and several of subsp. *miyakei* Nakane, 1960 from Kvushu, Japan (Ohita Pref.), all now deposited in the authors' collection.

#### Key to subgenera of *Leptocarabus*

1. Pronotum with lateral margins narrow, usually sharply defined. Aedeagus with end piece rather roundly terminated; ostium simple, or with a basal lobe, usually less than half of shaft ..... 2.
- Pronotum with lateral margins broad and gradually raised. Aedeagus with end piece sharply pointed; ostium with 2 basal lobes, very large and apparently exceeding half of shaft ..... *Weolseocarabus* subgen. nov.

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2. Elytra with primary intervals strongly carinate, continuously costate or interrupted ..... *Aulonocarabus*  
— Elytra with primary intervals weakly raised and generally interrupted frequently by small shallow foveae ..... *Adelocarabus*

Subgenus *Aulonocarabus* Reitter, 1896      북방-중 막징벌레 아속

*Aulonocarabus* Reitter, 1896, Best.-Tab. eur. Col. 34:192.

Type-species: *Carabus canaliculatus* Adams, 1896

Type-locality: U.S.S.R. (E. Siberia).

**Diagnosis:** Body generally small to medium sized. Coloring black or sometimes dark rufous to dark brown, without metallic luster, mat or polished.

Head moderately stout; frontal impressions deep prominent, smooth anteriorly, often rugose posteriorly; vertex rather flat or slightly convex mesally, more or less transversely concave to posterior margins of eyes; punctures very weak to evanescent. Mandibles generally short and broad, with inner margins more or less straight except apices which are abruptly bent inwards and pointed; dorsal surface smooth. Maxillary palpi with apical segments gently extending distally, about as long as penultimate segments. Labium generally without setae on mentum, with a median tooth short subtriangular; labial palpi moderate, with penultimate segments bisetose. Submentum usually flat, with a pair or rarely more of gular setae present. Eyes usually prominent, protrudent well laterally.

Antennae short to long, sometimes reaching before middle of elytra, with 2nd segments generally exceeding half as long as 3rd segments; the latter slightly compressed basally; hairy segments 5th to 8th or 9th with ventral hairless deeply depressed areas in male.

Pronotum wider than long, usually quadrate, subparallel-sided or slightly broader, or sometimes narrower posteriorly, generally bisetose on each side; lateral margins narrow, weakly to sharply defined, rather straight or gently sinuate before hind angles; hind angles subacutely protrudent well posteriorly; punctures weak or prominent, sometimes evanescent mesally; basal foveae deep to shallow longitudinally.

Elytra oblong oval to elongate oval, strongly convex or rather flat, with primary intervals strongly carinate, continuously costate or often interrupted apically; secondaries and tertiaries not developed or sometimes weakly traceable; lateral margins broad, with preapical emarginations usually absent or very obscurely rudimental; humeral serrations generally absent. Hind wings strikingly atrophied.

Hind coxae trisetose. Hind trochanters smooth, without any setiferous pore. Abdomen with transverse sulci weakly carved to evanescent.

Male aedeagus with shaft often comparatively straight; end piece rather roundly terminated; ostium simple, or with a papilla-like basal lobe, less than half of shaft. Endophallus usually short, with a ligula greatly degenerated into a small sclerite or patch of pigmented granules; copulatory piece entirely absent.

Female genitalia with bursa copulatrix very large, but not separated. Vaginal apophysis with inner plate very small; outer plate large, broad oval.

**Key to species of *Aulonocarabus***

1. Pronotum with lateral margins gently but distinctly sinuate before hind angles, narrower posteriorly. Elytra elongate oval, usually broadest near middle. Aedeagal ostium simple at base ..... 2.

- Pronotum with lateral margins more or less straight, somewhat subparallel or slightly wider posteriorly. Elytra rather oval, usually broadest behind middle. Aedeagal ostium with a papilla-like lobe at base . . . . . *Leptocarabus (Aulonocarabus) canaliculatus*
- 2. Median tooth of labial mentum about as long as its lateral lobes. Smaller species less than 25mm in length . . . . . 3.
- Median tooth of labial mentum apparently shorter than its lateral lobes. Larger species exceeding 25mm in length . . . . . *Leptocarabus (Aulonocarabus) vogti*
- 3. Elytra black, with secondary and tertiary intervals weakly traceable. Aedeagus with end piece very slender, strongly curved anteriorly . . . . . *Leptocarabus (Aulonocarabus) pseudokoreanus*
- Elytra dark rufous, with secondary and tertiary intervals hardly to very weakly traceable. Aedeagus with end piece strongly compressed on either side, comparatively broad and deep roundly terminated . . . *Leptocarabus (Aulonocarabus) kwanmobongensis* sp. nov.

16. *Leptocarabus (Aulonocarabus) canaliculatus* (Adams, 1812) 참 북방줄딱정벌레 (북방딱정벌레)

*Carabus canaliculatus* Adams, 1812, Mem. Soc. Nat. Mosc. 5:168, pl. 12(1).

Type-locality: U.S.S.R. (E. Siberia: Shigansk).

**Description:** General coloration black to dark rufous; head and pronotum black, with dorsum polished; elytra often dark rufous and mat.

Head moderately stout posteriorly; frontal impressions deep prominent, often reaching middle of eyes, smooth anteriorly whereas rugose posteriorly. Vertex more or less flat, rather transversely concave to posterior margins of eyes, with punctures evanescent. Mandibles with dorsal surface smooth. Maxillary palpi comparatively short, with apical segments gently extending distally, about as long as penultimate segments. Labium with mentum generally lacking setae; median tooth subtriangular, sharply pointed; about as long as its lateral lobes; labial palpi with apical segments gently extending distally, apparently shorter than penultimate segments (ratio, 1: 1.3-1.5). Submentum generally with a pair of gular setae.

Antennae short, usually slightly exceeding shoulders or not reaching one-third of elytra; 5th to 9th segments with ventral hairless deeply cut areas in male.

Pronotum slightly wider than long or subquadrate, subparallel-sided or slightly broader posteriorly; generally bisetose on each side, with lateral margins narrow and sharply defined anteriorly, somewhat weakly defined posteriorly, rather straight or very obscurely sinuate before hind angles; hind angles subacutely protrudent posteriorly and obliquely inclined downwards; median portion often with weak rugae or simply polished, deeply punctured posteriorly especially around basal foveae, and weakly so laterally; basal foveae often deep prominent, somewhat narrow longitudinally.

Elytra oblong oval, rather convex mesally, broadest behind middle, usually mat; lateral margins broad, with grounds of umbilicate series often more glossy than elsewhere; primary intervals strongly carinate and somewhat polished, continuously costate except apices and 3rd primaries which are often catenulate by a few very shallow small foveae; space between primaries deep and mat, punctulate and finely granulose. Hind wings strikingly atrophied.

Chaetotaxy of hind coxae generally trisetose, with postero-proximal setae always present.

Male aedeagus with shaft usually rather straight; end piece strongly curved and narrowed apically and roundly terminated; ostium with a papilla-like lobe at its basal area. Endophallus short, with a ligula greatly degenerated into a small sclerite or patch of pigmented granules; copulatory piece entirely absent.

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Female genitalia with bursa copulatrix very large and well developed, but not separated. Vaginal apophysis with inner plate very small and ovoid; outer plate large and broad oval.

Length: Male 22-30mm, female 21-35mm.

Distribution: Korea, China (Manchuria), Mongolia, U.S.S.R. (Maritime Territory, E. Siberia).

Remark: The nominate subspecies is represented in E. Siberia, Mongolia, and N. Manchuria, and is distinguished from other subspecies by the shape of pronotum in having posterior portion more wider, and by the shorter antennae. Beheim et Breuning (1943) described *Eucarabus canaliculatus rufinus* based on the material from "Chi-kuan-Shan, Korea", but the type-locality is indeed not in Korea but in Liaoning, S. Manchuria of China, adjacent to northeastern border of Korean Peninsula. So, this subspecies must be eliminated from the Korean carabid fauna till real new discovery in this country, on the other hand it is natural that Chinese fauna must accept this one.

Key to subspecies of *Leptocarabus (Aulonocarabus) canaliculatus*

1. Head and thorax black, elytra dark rufous. Pronotum subparallel-sided, or wider posteriorly. Elytra with space between primaries very finely granulose ..... 2.  
— Body generally always black. Pronotum very slightly sinuate before each hind angle. Elytra with space between primaries less granulose .....  
..... *Leptocarabus (Aulonocarabus) canaliculatus pappianus*
2. Pronotum with weak rugae on each side of mesal line; anterior margin broad linearly defined mesally. Aedeagus abruptly narrowed to end piece .....  
..... *Leptocarabus (Aulonocarabus) canaliculatus careniger*  
— Pronotum simple polished mesally; anterior margin moderate linearly defined. Aedeagus gradually narrowed to end piece and more broadly terminated .....  
..... *Leptocarabus (Aulonocarabus) canaliculatus vojnitsi*

16-1. *Leptocarabus (Aulonocarabus) canaliculatus careniger* (Chaudoir, 1863)

북방줄 딱정벌레 (북방딱정벌레)

*Carabus careniger* Chaudoir, 1863, Ann. Soc. Ent. Franc. 31:448.

*Carabus (Carabus Sect. Eucarabus) canaliculatus* n. *careniger*: Breuning, 1932, Best.-Tab. eur. Col. 104:251 ①-②.

*Carabus (Aulonocarabus) canaliculatus* var. *careniger* (sic): Yano, 1941, Nipp. Koch. 4(1): 20 ③-④.

*Carabus canaliculatus careniger*: Cho, 1957, Hum. & Sci., Nat. Sci. Kor. Univ. 2:179 (Korea).

*Carabus canaliculatus careniger* (sic et partim): Cho, 1963b, Journ. Nat. Acad. Sci. Rep. Kor. Nat. Sci. Ser. 4:81 ⑤-⑧.

*Carabus canaliculatus*: Zool. Soc. Kor., 1968, Nom. An. Kor. 2:97 (Korea).

*Carabus canaliculatus* (partim): Cho, 1969, Ill. Encycl. Faun. & Flor. Kor. 10:130-131, pl. 4 (18) (N. Korea).

*Eucarabus canaliculatus careniger*: Lee, 1977, Kor. Journ. Ent. 7(2):37 ⑨-⑩.

*Carabus canaliculatus careniger*: Mandl, 1980, Fol. Ent. Hung. 41(33): 136-138. ①-②.

Type-locality: U.S.S.R. (Maritime Territory).

Description: General coloration black to dark rufous, head and pronotum polished black, elytra usually dark rufous.

Antennae short, but slightly longer than those of nominate subspecies. Pronotum with lateral margins usually subparallel each other, or sometimes very obscurely sinuate before hind angles; median portion with weak rugae on each side of mesal line; anterior margin broad linearly defined mesally, flat.

Elytra with primary intervals weakly costate apically and catenulate; space between primaries mat and punctured, very finely granulose; secondaries and tertiaries evanescent.

Male aedeagus rather straight basally, abruptly narrowed and curved apically, with end piece small and narrow, roundly terminated.

Length: Male 22-26mm, female 26-29mm.

Locality: HB : Ch'ongjin (=Cheong-Jin<sup>⑨</sup>, Chungzin<sup>⑤</sup>, Seishin<sup>①</sup>), Chuul (=Chuul<sup>⑥</sup>, Shoutsu<sup>④</sup>), Mt. Kwanmobong (=Kwanmo-san<sup>⑧</sup>), Mt. Mayisan (=Mt. Baji<sup>③</sup>), Onp'o (=Ompo<sup>②</sup>, On-Bo<sup>⑩</sup>).

HN : Unsuryong (=Unsu-ryung<sup>⑦</sup>).

Distribution: Korea (Northeastern part), China (E. Mancuria), U.S.S.R. (Maritime Territory).

#### 16-2. *Leptocarabus (Aulonocarabus) canaliculatus vojnitzi* (Mandl, 1980)

백두봉방출 딱정벌레

*Eucarabus canaliculatus careniger* (nec Chaudoir): Beheim et Breuning, 1943, Mitt. Münchn.

Ent. Ges. 33(1):4, pl. 1(4)<sup>①</sup>.

*Carabus canaliculatus vojnitzi* Mandl, 1980, Fol. Ent. Hung. 41(33):138-139<sup>②-④</sup>.

Type-locality: Korea (Samjiyŏn and Mt. Paektusan: HB).

Description: General coloration black to dark rufous, head and pronotum polished black, elytra dark rufous.

Antennae as in the preceding subspecies, slightly longer than those of nominate one. Pronotum with lateral margins usually subparallel each other, or sometimes very obscurely sinuate before hind angles, narrow and sharply defined; median portion often simple polished; anterior margin moderate linearly defined.

Elytra broadest behind middle, with primary intervals often less weakly costate apically than those of the preceding subspecies, distal portion of 3rd primaries often less catenulate; secondaries and tertiaries evanescent.

Male aedeagus with distal portion gradually narrowed apically and more or less gently curved; end piece rather broadly terminated.

Length: Male 20-23mm, female 21-24mm.

Locality: HB : Mt. Paektusan (=Mt. Paik-yet-Shan<sup>①</sup>, Mts. Payk-yek-Chann<sup>③</sup>, Peik-tu-shan<sup>④</sup>), Samjiyon (=Sam-zi-yan<sup>②</sup>).

HN : Hyesanjin.

Distribution: Korea (Northern part, surroundings of Mt. Paektusan).

#### 16-3. *Leptocarabus (Aulonocarabus) canaliculatus pappianus* (Mandl, 1980)

자모봉방출 딱정벌레

*Carabus canaliculatus pappianus* Mandl, 1980, Fol. Ent. Hung. 41(33):138<sup>①</sup>.

Type-locality: Korea (Mt. Chamosan: PN).

Description: General coloration nearly always black. Pronotum wider than long, with lateral margins rather roundly contracted anteriorly, slightly sinuate before hind angles.

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Elytra slightly elongater in male than in female; primary intervals weakly costate apically; 3rd primaries often degenerate at distal half; space between primaries less granulose, mat; secondaries and tertiaries hardly traceable; lateral margins markedly broad and not grooved.

Male aedeagus with distal portion gently curved and very gradually narrowed apically, with end piece strikingly narrow and slender.

Length: Male 28-30mm, female 30-34mm.

Locality: PN : Mt. Chamosan (=Prov. Pyong-sung, Bek-sung-li: Za-mo san<sup>①</sup>).

Distribution: Korea (Northern central part).

17. *Leptocarabus (Aulonocarabus) vogti* Beheim et Breuning, 1943 부령북방줄 딱정벌레

*Eucarabus vogti* Beheim et Breuning, 1943, Mitt. Münchn. Ent. Ges. 33(1): 5, pl. 1(5)<sup>①</sup>.

*Carabus canaliculatus pseudokoreanus* (partim): Mandl, 1980, Fol. Ent. Hung. 41(33):137, 139-140<sup>②-③</sup>.

Type-locality: Korea (Puryŏng: HB).

Description: General coloration black to dark rufous. Body rather elongate oval. Head more or less stout posteriorly. Labium with median tooth apparently shorter than its lateral lobes.

Antennae moderately long, usually reaching one-third of elytra in male.

Pronotum less polished, with lateral margins gently sinuate before hind angles and sharply defined; hind angles small and subacute, declined downwards.

Elytra elongate oval, broadest near middle; primary intervals strong linearly carinate except apices which are low and catenulate; secondaries and tertiaries hardly traceable.

Male aedeagus with distal portion very strongly curved anteriorly; end piece not contracted and broad roundly terminated.

Length: Male 26-28mm, female 27-29mm.

Locality: HB : Puryŏng (=Pu Ryon<sup>②</sup>, Pu Ryong<sup>③</sup>, Py Ryong<sup>①</sup>).

Distribution: Korea (Northeastern part).

Remark: The present species is allied to *canaliculatus* group, but seems much related to *pseudokoreanus* group as seen from the pronotal character.

18. *Leptocarabus (Aulonocarabus) pseudokoreanus* (Breuning, 1932)

꼬마북방줄 딱정벌레 (고려딱정벌레붙이, 어리참딱정벌레, 꼬마줄딱정벌레)

*Carabus (Carabus Sect. Eucarabus) pseudokoreanus* Breuning, 1932, Best.-Tab. eur. Col. 104:253<sup>①</sup>.

*Carabus pseudokoreanus*: Cho, 1957, Hum. & Sci., Nat. Sci. Kor. Univ. 2: 179 (Korea).

*Carabus pseudokoreanus* (partim): Cho, 1963b, Journ. Nat. Acad. Sci. Rep. Kor. Nat. Sci. Ser. 4:81.<sup>②</sup>

*Carabus pseudokoreanus*: Zool. Soc. Kor., 1968, Nom. An. Kor. 2:97 (Korea).

*Carabus pseudokoreana*: Cho, 1969, Ill. Encycl. Faun. & Flor. Kor. 10: 132-133, pl. 4 (22) (N. Korea).

*Eucarabus pseudokoreanus pseudokoreanus*: Lee, 1977, Kor. Journ. Ent. 7(2):37<sup>③</sup>.

*Carabus canaliculatus pseudokoreanus* (partim): Mandl, 1980, Fol. Ent. Hung. 41(33):137, 139-140<sup>④</sup>.

Type-locality: Korea (Onp'o: HB).

Description: General coloration black, with body comparatively small and elongate.

Pronotum polished mesally, with lateral margins apparently sinuate before hind angles. Elytra rather elongate oval, with primary intervals strong linearly carinate except apices which are low and catenulate; secondaries present, forming a row of granules; tertiaries often traceable.

Male aedeagus with distal portion very strongly curved anteriorly; end piece markedly long, narrow roundly terminated.

Length: Male 22-23mm, female 23-24mm.

Locality: HB : Chuul (=Chuul<sup>②</sup>), Onp'o (=Berge bei Ompo<sup>①</sup>, Berge um Ompo<sup>④</sup>, On-Bo<sup>③</sup>).

Distribution: Korea (Northeastern part).

Remark: Recently Mandl (1980) placed the above species into *canaliculatus* as one of the sub-specific status based on the material from Pu Ryong (=Puryŏng: HB), but the material he examined seems possibly not belonging to *pseudokoreanus* but may be referring the preceding species — *vogti*.

19. *Leptocarabus (Aulonocarabus) kwanmobongensis* Kwon et Lee, sp. nov. 판모북방줄딱정벌레

Description: General coloration dark rufous or partially black, with dorsum polished; head usually black, elytra dark rufous.

Head rather stout posteriorly; frontal impressions deep prominent, less reaching middle of eyes, smooth anteriorly whereas rugose posteriorly. Vertex more or less flat and polished, rather transversely concave to posterior margins of eyes, scattered with micropunctures and rather irregular rugae. Mandibles with dorsal surface smooth, bearing sparse micropunctures distally. Maxillary palpi moderate, with apical segment gently extending distally, about as long or very slightly longer than penultimate segments (ratio, 1: 0.95). Labium with mentum generally without setae; median tooth subtriangular, sharply pointed, about as long as its lateral lobes; labial palpi with apical segments gently extending distally, apparently shorter than penultimate segments (ratio, 1: 1.25). Submentum with a pair or more of gular setae present.

Antennae short, usually less reaching basal one-third of elytra in male; 5th to 9th segments with ventral hairless deeply cut areas in male (often with 10th very weakly depressed).

Pronotum wider than long (ratio, 1: 0.76-0.83), bisetose on each side rather flat and polished, usually narrower posteriorly; lateral margins very narrow and sharply defined, somewhat even roundly contracted anteriorly, distinctly but gently sinuate before hind angles; hind angles subtriangularly protrudent posteriorly and very slightly inclined downwards; anterior margins very slightly emarginate mesally, usually weak and obscurely defined; punctures very weak, rather sparse, rugose posteriorly, with irregular weak rugae present; basal foveae small and shallow, somewhat longitudinally depressed.

Elytra elongate oval, rather flat, broadest near middle, usually rather polished; lateral margins broad, with grounds outside umbilicate series usually slightly more glossy than elsewhere; primary intervals strongly carinate and polished, often continuously costate except apices which are catenulate by a few very shallow small foveae; space between primaries rather deep and polished, punctulate which rudimentally indicating secondary and tertiary striae and very sparse finely granulose; secondaries and tertiaries hardly to very weakly traceable. Hind wings strikingly atrophied.

Chaetotaxy of hind coxae generally trisetose, with postero-proximal setae always present. Abdomen with transverse sulci vestigial or weakly traceable.

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Male aedeagus with shaft less curved basally and somewhat gradually broad distally, strongly evenly curved before base of end piece; end piece strikingly compressed and broad, rather roundly terminated; ostium simple, not lobated or wrinkled basally, apparently shorter than half of shaft. Endophallus short, widened apically, with a ligula greatly degenerated into a small elongate oval patch of pigmented granules; copulatory piece entirely absent.

Female genitalia with bursa copulatrix very large and well developed, but not separated. Vaginal apophysis with inner plate much small and elongate oval; outer plate large and broad oval; vertical plate comparatively very low.

**Length:** Male 19mm, female 19.5-23mm.

**Type-examined:** Holotype male, Mt. Kwanmobong, HB, N. Korea, ?, VII, 1934, coll. S.M. Lee; paratypes: 1 female, 18, VII, 1932; 1 female, 28, VII, 1934; all the same locality and collector.

**Remark:** The present new species is closely allied to *Leptocarabus (Aulonocarabus) pseudo-koreanus* (Breuning, 1932) in the shape of pronotum, but easily separated from the latter by the male genital characters. Ishikawa's note (1966: P. 456) on a male specimen of *Carabus (Aulonocarabus) pseudokoreanus* from Mt. Kanbōzan (=Mt. Kwanmobong: HB) may be possibly in accord with the very new one.

Subgenus *Weolseocarabus* Kwon et Lee, subgen. nov.

고려줄막정벌레 아속

Type-species: *Carabus koreanus* Reitter, 1895

Type-locality: Korea.

**Diagnosis:** Body generally medium to slightly large sized. Coloring black or rarely dark brown, with dorsum usually mat, without any prominent metallic luster.

Head moderately stout; frontal impressions deep prominent anteriorly, often rugose posteriorly; vertex rather flat or slightly convex mesally, more or less transversely concave to posterior margins of eyes; punctures usually very fine, often rugae prominent. Mandibles generally short and broad, with inner margins more or less straight except apices which are abruptly bent inwards and pointed; dorsal surfaces smooth. Maxillary palpi with apical segments gently extending distally, about as long as penultimate segments. Labium generally without setae on mentum, with a median tooth short subtriangular; labial palpi moderate, with penultimate segments bisetose. Submentum generally flat, usually with 2 pairs or more of gular setae present. Eyes usually prominent, protrudent well laterally.

Antennae moderate, less reaching before middle of elytra, with 2nd segments generally exceeding half as long as 3rd segments; the latter sometimes very obscurely compressed basally; hairy segments with ventral hairless weakly depressed areas in male.

Pronotum wider than long, rather flat and subquadrate, usually narrower posteriorly, generally bisetose on each side; lateral margins broad and gradually raised, distinctly gently sinuate before hind angles; hind angles broad roundly protrudent posteriorly; punctures usually fine but prominent; basal foveae deep prominent.

Elytra ovoid to elongate oval, evenly convex, with sculpture triploid, pentaploid or heptaploid, heterodyname, or sometimes vestigial except primary intervals; primaries strongly carinate to weakly catenulate; secondaries and tertiaries present or evanescent; lateral margins broad, with preapical emarginations usually absent or very obscurely rudimental; humeral serrations generally absent. Hind wings very narrowly atrophied.

Hind coxae trisetose. Hind trochanters smooth, or rarely with a setiferous pore on each venter. Abdomen with transverse sulci vestigial.

Male aedeagus roundly curved, with end piece strikingly compressed and sharply pointed

ostium very large, apparently exceeding half of shaft, with 2 separated papilla-like basal lobes. Endophallus short, with a ligula greatly degenerated into a small corn-like sclerite; copulatory piece entirely absent; praeputial pad large and well developed.

Female genitalia with bursa copulatrix very large, but not separated. Vaginal apophysis with inner plate very narrowly sclerotized; outer plate large and broad oval.

**Remark:** The present new subgenus is allied to subgen. *Leptocarabus* Géhin, 1885 in the shape of pronotum, both share the similar structure of lateral margins in being not sharply set off by grooves but broad and gradually raised and gently sinuate before hind angles. Whereas the elytral sculpture of this new subgenus possesses the extremities of both characters of subgenera *Aulonocarabus* Reitter, 1895 and *Adelocarabus* Lapouge, 1931. But the male genitalic structure is entirely different from any of these related subgenera, for example, the end piece is strikingly compressed and sharply pointed; the ostium is much large and apparently exceeds half length of the shaft, bearing 2 papilla-like lobe at its basal area, on the other hand, these 3 related subgenera have the end pieces which are not sharply pointed but usually roundly or less subacutely terminated; the ostium is always shorter than half length of the shaft, bearing a papilla-like lobe or entirely simple smooth at its basal area but not two.

Thus judging from the above comparison, it is probable that *Weolseocarabus* would presumably derived from the common ancestral stem of *Aulonocarabus*, and *Leptocarabus* s. str. would evolved from the stock of *Weolseocarabus* and *Adelocarabus*. *Leptocarabus* s. str. is apparently more evolved regressively in the absence of gular setae and anterior setae of hind coxae as indicated by Ishikawa (1972), but it seems more related to *Weolseocarabus* because it still retains the resemblance in the shape of pronotum and bearing often a bilobate ostium lobe.

## 20. *Leptocarabus* (*Weolseocarabus*) *koreanus* (Reitter, 1895)

고리줄딱정벌레 (고리딱정벌레, 세줄박이딱정벌레, 참딱정벌레, 줄딱정벌레)

*Carabus* (*Aulonocarabus*) *Koreanus* Reitter, 1895, Wien. Ent. Zeit. 14(4):110.

**Type-locality:** Korea (Northeastern part ?).

**Description:** General coloration black or rarely dark brown, rather mat, without any metallic luster on dorsum.

Head moderately stout posteriorly; frontal impressions deep prominent and rather smooth anteriorly, whereas rugose posteriorly, often reaching middle of eyes. Labrum polished, deeply emarginate mesally. Vertex more or less flat, somewhat polished, rather transversely concave to posterior margins of eyes, with punctures very fine and rugae often prominent. Mandibles with dorsal surface smooth, with very fine sparse micropunctures. Maxillary palpi moderate. With apical segments gently extending distally, almost as long as penultimate segments. Labium with mentum generally lacking setae; median tooth short subtriangular, sharply pointed, about as long as its lateral lobes; labial palpi with apical segments gently extending distally, apparently shorter than penultimate segments (ratio, 1: 1.3). Submentum generally with 2 pairs or more of gular setae.

Antennae moderately long, less reaching before middle of elytra in male; 6th to 8th or 9th segments with ventral hairless weakly depressed areas in male.

Pronotum wider than long (ratio, 1: 0.75-0.85), widest before middle, rather flat, generally with 2 setae on each side; anterior margin slightly roundly emarginate, linearly well defined; lateral margins not sharply set off by grooves but broad and gradually raised, even roundly contracted anteriorly, distinct gently sinuate before hind angles; hind angles broad roundly protrudent posteriorly; punctures fine and dense, but prominent; basal foveae markedly deep pro-

minent and large.

Elytra oblong oval to elongate oval, evenly convex mesally, broadest middle to apical third, usually mat; lateral margins somewhat broad distally, with grounds of umbilicate series generally more glossy than elsewhere; primary intervals weakly costate and catenulate, or sometimes strikingly carinate and seldom interrupted proximally; space between primaries less concave, mat and granulose, often bearing 3 to 7 rows of obscure costae each bordered by a series of micro-punctures, or nearly evanescent; secondaries, if present, slightly higher than tertiaries or quaternaries. Hind wings strikingly narrowly atrophied, tapering apically.

Chaetotaxy of hind coxae generally trisetose, with postero-proximal setae always present. Hind trochanters smooth, or rarely with a setiferous pore on each venter.

Male aedeagus with shaft roundly arcuate; end piece strikingly compressed and roundly curved distally, somewhat sickle-shaped, with apex sharply pointed and directed anteriorly; ostium very large and long, apparently exceeding half length of shaft, with 2 separate papilla-like basal lobes. Endophallus markedly short, broadly covered with prominent setulae or micro-piles at proximal wall; ligula greatly degenerated into a small corn-like process; copulatory piece entirely absent; praeputial pad markedly large and long.

Female genitalia with bursa copulatrix very large and well developed, but not separated. Vaginal apophysis with inner plate very narrow, small linearly sclerotized; outer plate large, broad and round.

Length: Male 23-30mm, female 24-33mm.

Distribution: Korea.

#### Key to subspecies of *Leptocarabus* (*Weolseocarabus*) *koreanus*

1. Elytra with primary intervals generally weakly costate, and interrupted frequently; secondaries and tertiaries present, but the latter weaker than the former . . . . . 2.
  - Elytra with primary intervals usually strikingly carinate, often seldom interrupted proximally; secondaries and tertiaries evanescent, or weakly traceable . . . . .  
*Leptocarabus* (*Weolseocarabus*) *koreanus weolseoe* subsp. nov.
2. Aedeagus with end piece usually more sharply curved apically . . . . .  
*Leptocarabus* (*Weolseocarabus*) *koreanus koreanus*
  - Aedeagus with end piece usually broad and less sharply curved apically . . . . .  
*Leptocarabus* (*Weolseocarabus*) *koreanus minor* subsp. nov.

#### 20-1. *Leptocarabus* (*Weolseocarabus*) *koreanusweolseoe* Kwon et Lee, subsp. nov. 월 서고려줄딱정벌레

*Carabus gehini* (nec Fairmaire): Kim, 1960, Journ. Appl. Zool. Soc. 3(1): 25 <sup>①</sup>.

*Carabus canaliculatis careniger* (sic et partim): Cho, 1963b, Journ. Nat. Acad. Sci. Rep. Kor. Nat. Sci. Ser. 4:81 <sup>②-③</sup>.

*Carabus gehini* (nec Fairmaire): Educ. Min., 1967, Rep. Acad. Surv. Mt. Sul Ak:192 <sup>④</sup>.

*Carabus canaliculatus* (partim) + *C. c. careniger* (nec Chaudoir): Cho, 1969, Ill. Encycl. Faun. & Flor. Kor. 10: 130-131, pl. 4 (19) (C. Korea).

*Eucarabus koreanus koreanus* (partim): Lee, 1977, Kor. Journ. Ent. 7(2):37 <sup>⑤</sup>.

Description: Head and pronotum as in the nominate subspecies. Antennae with hairy segments 6th to 9th bearing ventral hairless weakly depressed areas in male.

Elytra with primary intervals usually strikingly carinate, often seldom segmented proximally, but apices and sometimes 3rd primaries catenulate; space between primaries often comparatively

more concave than those of other subspecies; secondaries and tertiaries evanescent or weakly traceable, but the former, if present, slightly higher.

Male aedeagus with end piece usually roundly curved and sharply pointed, much longer than wide.

Length: Male 24-28mm, female 24-30mm.

Type-examined: Holotype male, Mt. Sölaksan, GW, C. Korea, 27, VII, 1969, coll. S.M. Lee; paratypes: 1 female, 4, VIII, 1969; 1 female, 5, VIII, 1969; 1 female, 6, VIII, 1969; 2 females, 8, VIII, 1969; 3 females, 9, VIII, 1969; 4 males, 10, VIII, 1969; 1 male, 1 female, 11, VIII, 1969; 1 male, 1 female, 12, VIII, 1969; 4 males, 13, VIII, 1969; 3 males, 1 female, 14, VIII, 1969; 1 female, 17, VIII, 1969; 1 female, 14, VI, 1971; 4 females, 21, VII, 1971; 1 female, 25, VII, 1971; 2 females, 29, VII, 1971; 2 females, 31, VII, 1971; 1 female, 19, VIII, 1972; 1 male, 21, VI, 1979; 1 male, 1 female, 25, VII, 1979, all the same locality and collector; Mt. Kūmgangsan, GW, C. Korea, 1 female, 2, VIII, 1932, coll. S.M. Lee.

Locality: GW : Mt. Kūmgangsan (=Kumkang-san<sup>②</sup>), Mt. Sölaksan (=Mt. Seol-Ag<sup>⑤</sup>, Solak Mountain<sup>①</sup>, Mt. Sul Ak<sup>④</sup>, Sulak-san<sup>③</sup>).

Remark: This new subspecies differs from other races by the sculpture of elytra in having carinated primary intervals.

20-2. *Leptocarabus (Weolseocarabus) koreanus koreanus* (Reitter, 1895) 고려줄막징벌레 (줄막징벌레)

*Carabus (Aulonocarabus) koreanus* Reitter, 1895, Wien. Ent. Zeit. 14(4): 110 (Korea).

*Carabus coreanus* (sic): Lapouge, 1910, L'Echange 26:4 (Corea).

*Carabus (Carabus Sect. Aulonocarabus) koreanus*: Csiki, 1927, Col. Cat. 91:268 (Korea).

*Leptocarabus (Adelocarabus) koreanus*: Lapouge, 1931, Gen. Ins. 192:597, pl. 8(3) (Corée septentr.).

*Carabus (Carabus Sect. Eucarabus) koreanus*: Breuning, 1932, Best.-Tab. eur. Col. 104:254-255<sup>①</sup>.

*Carabus septemcarinatus* (nec Motschulsky): Mochizuki, 1935, Rinsei 2(4):33<sup>②</sup>.

*Carabus (Aulonocarabus) koreanus*: Yano, 1941, Nipp. Koch. 4(1): 20 (Korea).

*Carabus koreanus* + *C. septemcarinatus* (nec Motschulsky): Cho, 1957, Hum. & Sci., Nat. Sci. Kor. Univ. 2:179 (Korea).

*Carabs koreanus* (partim) + *C. septemcarinatus* (nec Motschulsky): Cho, 1963b, Journ. Nat. Acad. Sci. Rep. Kor. Nat. Sci. Ser. 4:81<sup>③-④</sup>.

*Carabus koreanus* + *C. septemcarinatus* (nec Motschulsky): Zool. Soc. Kor., 1968, Nom. An. Kor. 2:97 (Korea).

*Eucarabus koreanus koreanus* (partim): Lee, 1977, Kor. Journ. Ent. 7(2): 37<sup>⑤-⑩</sup>.

*Carabus koreanus*: Mandl, 1980, Fol. Ent. Hung. 41(33):137-140<sup>①</sup>.

Type-locality: Korea (Northeastern part ?).

Description: Antennae with hairy segments 6th to 9th bearing ventral hairless weakly depressed areas in male.

Elytra with primary intervals generally weakly costate and well catenulate; space between primaries often not concave, finely granulose, with 3 to 7 rows of obscure costae each bordered by a series of micropunctures; secondaries slightly higher than tertiaries or quaternaries.

Male aedeagus with end piece usually much longer than wide, strong roundly curved and sharply pointed, directed anteriorly.

Length: Male 24-30mm, female 25-33.

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Locality: GB : Mt. Hwanghaksan, Mt. P'algongsan, Mt. T'ohamsan.

GG : Konjiam (=Gon-Ji-Am<sup>⑨</sup>).

GN : Mt. Kayasan, Is. Kōjedo (=Mt. Og-Nyeo-Bong<sup>⑪</sup>), Mt. Kūmjōngsan, Mt. Sinbulsan  
Mt. Yōngch'wisan.

GW : Mt. Kach'ilbong, Kangch'on (=Gang-Chon<sup>⑧</sup>), Mt. Odaesan (=Mt. O-Dae<sup>⑤</sup>),  
Mt. Sogūmgang (=So-Geum-Gang<sup>⑥</sup>), Mt. T'aebaeksan (=Mt. Tae-Baeg<sup>⑦</sup>), Mt. Tut'asan.

HB : Mt. Kwanmobong (=Kanmo-san<sup>④</sup>).

HN : Pujōn'gowōn<sup>②</sup>, Wōnsan (=Gensan<sup>①</sup>, Weonsan<sup>③</sup>)

JB : Mt. Tōgyusan.

Distribution: Korea.

20-3. *Leptocarabus (Weolseocarabus) koreanus minor* Kwon et Lee, subsp. nov.    소백고려줄딱정벌레

*Eucarabus koreanus koreanus* (partim): Lee, 1977, Kor. Journ. Ent. 7(2):37<sup>①</sup>.

Description: Body slightly smaller than other subspecies. Antennae with 6th or 7th to 8th or 9th hairy segments bearing ventral hairless very weakly depressed areas in male.

Elytra with primary intervals generally weakly costate and well catenulate; space between primaries often not concave, finely granulose, with 5 to 7 rows of obscure costae each bordered by a series of micropunctures; secondaries and tertiaries usually slightly higher than quaternaries.

Male aedeagus with end piece usually comparatively broad, less sharply curved apically.

Length: Male 23-25.5mm, female 25-27.5mm.

Type-examined: Holotype male, Mt. Sobaeksan, GB, S. Korea, 23, VII, 1977, coll. S.M. Lee; paratypes: 3 males, 2 females, same data as holotype; 1 female, 24, VII, 1977, the same locality and collector.

Locality: GB : Mt. Sobaeksan (=Mt. So-Baeg<sup>①</sup>).

Remark: The present new species is distinguishable from other subspecies by the smaller body and the shape of end piece of the male aedeagus.

Subgenus *Adelocarabus* Reitter, 1896    민줄딱정벌레 아속

*Adelocarabus* Reitter, 1896, Best.-Tab. eur. Col. 34-192.

Type-species: *Carabus (Leptocarabus) semiopacus* Reitter, 1896

Type-locality: Korea.

Diagnosis: Body generally small to rather large sized. Coloring black or rarely dark brown, without any prominent metallic luster on dorsum.

Head moderately stout; frontal impressions deep prominent anteriorly, often less rugose posteriorly; vertex rather flat, often more or less concave to posterior margins of eyes; punctures usually very fine. Mandibles generally short and broad, with inner margins more or less straight except apices which are abruptly bent inwards and pointed; dorsal surfaces smooth. Maxillary palpi short to moderately long, with apical segments gently extending distally, about as long as penultimate segments. Labium generally without setae on mentum, with a median tooth short subtriangular, about as long as or slightly shorter than its lateral lobes, or rarely exceeding; labial palpi short to moderately long, with penultimate segments bisetose. Submentum generally flat or slightly thickened mesally, with a pair or more of gular setae present. Eyes usually prominent, protrudent well laterally.

Antennae moderate to very long, often exceeding middle of elytra in male, with 2nd segments generally exceeding half as long as 3rd segments; both sometimes very obscurely compressed basally; hairy segments with ventral hairless depressed areas in male.

Pronotum often wider than long, or sometimes apparently narrower than long, rather flat, generally bisetose on each side; lateral margins generally narrow and sharply defined, distinctly gently sinuate before hind angles; hind angles roundly to subtriangularly well protrudent posteriorly; punctures usually fine, prominent; basal foveae often strikingly deep prominent.

Elytra ovoid to strongly elongate, markedly convex to rather flat mesally, with sculpture triploid to pentaploid heterodyname; intervals at most weakly raised, with secondaries and tertiaries much weaker than primaries which are often catenulate; lateral margins with preapical emarginations usually absent or very obscurely rudimental, grounds of umbilicate series generally more glossy than elsewhere; humeral serrations generally absent. Hind wings very narrowly atrophied.

Hind coxae generally trisetose. Hind trochanters smooth, or very rarely with a setiferous pore on each venter. Abdomen with transverse sulci prominent, or vestigial.

Male aedeagus roundly curved, with end piece small and often roundly terminated; ostium moderate, usually less than half of shaft, simple or with a papilla-like basal lobe. Endophallus moderately short, with a ligula greatly degenerated into a small sclerite or patch of pigmented granules; copulatory piece entirely absent; praeputial pad moderate, deep.

Female genitalia with bursa copulatrix very large, but not separated. Vaginal apophysis with inner plate very small, elongate oval or much narrowly sclerotized; outer plate large, broad oval.

#### Key to species of *Adelocarabus*

1. Elytra flat, with lateral margins very broad. Abdomen with transverse sulci prominent, only partially weak mesally . . . . . 2.  
 —. Elytra more or less convex, with lateral margins moderately narrow. Abdomen with transverse sulci obscurely reduced . . . . . *Leptocarabus (Adelocarabus) gossarei*
2. Pronotum with hind angles usually subtriangularly protrudent. Male aedeagus moderately stout at middle; end piece moderately short and more or less roundly terminated . . . . . 3.  
 —. Pronotum with hind angles usually roundly protrudent. Male aedeagus strikingly stout at middle; end piece extraordinarily short and pointed . . . . .  
 . . . . . *Leptocarabus (Adelocarabus) vogtianus*
3. Frontal impressions weaker posteriorly. Pronotum with hind angles less inclined downwards. Elytra rather flat, with intervals very weak. Aedeagus with ostium simple smooth . . . . .  
 . . . . . *Leptocarabus (Adelocarabus) semiopacus*  
 —. Frontal impressions prominent posteriorly. Pronotum with hind angles rather inclined downwards. Elytra slightly more convex, with intervals often slightly more raised. Aedeagus with a papilla-like ostium lobe . . . . . *Leptocarabus (Adelocarabus) seishinensis*

#### 21. *Leptocarabus (Adelocarabus) semiopacus* (Reitter, 1895) 민종택정벌레 (원산따정벌레)

- Carabus (Leptocarabus) semiopacus* Reitter, 1895, Wien, Ent. Zeit. 14(4): 109-110 (Korea).  
*Carabus (Adelocarabus) semiopacus*: Reitter, 1896, Best.-Tab. eur. Col. 34: 192 (Korea).  
*Carabus (Adelocarabus) semiopacus*: Reitter, 1897, Deutsch. Ent. Zeitschr. 41(1): 28 (Korea).  
*Carabus cancelliculatus* sv. *semiopacus*: Lapouge, 1910, L'Echange. 26: 4 (Korea).  
*Carabus (Carabus Sect. Adelocarabus) semiopacus*: Csiki, 1927, Col. Cat. 91: 268 (Korea).  
*Leptocarabus (Adelocarabus) semiopacus*: Lapouge, 1931, Gen. Ins. 192: 597 (Corée)

*Carabus* (*Carabus* Sect. *Eucarabus*) *semiopacus*: Breuning, 1932, Best.-Tab. eur. Col. 104:257-258<sup>①</sup>.

*Eucarabus semiopacus*: Beheim et Brenning, 1943, Mitt. Münchn. Ent. Ges. 33(1):6, pl. 2 (10)<sup>①</sup>.

*Carabus semiopacus*: Cho, 1957, Hum. & Sci., Nat. Sci. Kor. Univ. 2: 179 (Korea).

*Carabus semiopacus*: Cho, 1963b, Journ. Nat. Acad. Sci. Rep. Kor. Nat. Sci. Ser. 4:82<sup>②</sup>.

*Carabus semiopacus*: Zool. Soc. Kor., 1968, Nom. An. Kor. 2:97 (Korea).

*Carabus semiopacus*: Cho, 1969, Ill. Encycl. Faun. & Flor. Kor. 10: 133, pl. 4 (23) (N. Korea).

*Carabus* (*Adelocarabus*) *semiopacus*: Ishikawa, 1972, Bull. Nat. Sci. Mus. Tokyo. 15(1):22.

*Carabus* (*Adelocarabus*) *semiopacus*: Nakane, 1977a, Nat. & Ins. 12(10): 8 (Korea).

*Eucarabus semiopacus semiopacus*: Lee, 1977, Kor. Journ. Ent. 7(2):37<sup>③-⑥</sup>.

*Eucarabus semiopacus*: Yoon et Nam, 1979, Rep. Kor. Ass. Cons. Nat. 17:144<sup>⑦</sup>.

**Type-locality:** Korea (Northeastern part ?).

**Description:** General coloration black or sometimes dark rufous, fore body more or less polished, with elytra mat except marginal areas which are polished.

Head moderately stout posteriorly; frontal impressions deep prominent and rather smooth anteriorly, whereas rugose and often very shallow or rarely vestigial posteriorly, often reaching middle of eyes. Labrum polished, deeply emarginate mesally. Vertex more or less flat, somewhat polished, slightly transversely concave to posterior margins of eyes, with punctures very fine or vestigial, rugae often present. Mandibles with dorsal surface smooth, with very fine sparse micropunctures. Maxillary palpi moderately long, with apical segments gently extending distally, about as long as or slightly exceeding penultimate segments (ratio, 1: 1.0-0.9). Labium with mentum generally lacking setae; median tooth short subtriangular, about as long as or slightly shorter than its lateral lobes; labial palpi moderately long, with apical segments gently extending distally, apparently shorter than penultimate segments (ratio, 1: 1.25-1.3). Submentum usually with a pair or rarely more of gular setae.

Antennae long, sometimes reaching behind middle of elytra in male; 5th or 6th to 8th or 9th segments with ventral hairless weakly depressed areas in male.

Pronotum somewhat quadrate, wider than long (ratio, 1: 0.8-0.87), rather flat mesally, generally with 2 setae on each side; anterior margin slightly roundly emarginate, linearly defined; lateral margins narrow and sharply defined, somewhat even roundly contracted anteriorly, gently sinuate before hind angles; hind angles subtriangularly protrudent well postero-laterally; punctures moderately fine, often subrugose; basal foveae strikingly deep, usually continuous to transverse depressions.

Elytra ovoid to elongate oval, rather flat, broadest behind middle, usually mat; lateral margins markedly broad in female, with grounds of umbilicate series more glossy than elsewhere; sculpture pentaploid heterodyname, with intervals at most weakly raised; primaries weakly costate and catenulate; secondaries often very slightly higher than tertiaries and quaternaries, sometimes nearly as high as primaries. Hind wings strikingly narrowly atrophied, tapering apically.

Chaetotaxy of hind coxae generally trisetose, with postero-proximal setae always present. Hind trochanters smooth, or very rarely with a setiferous pore on each venter.

Male aedeagus with shaft roundly arcuate; end piece comparatively short and slightly bent at base, roundly terminated; ostium simple, not lobate, slightly shorter than half length of shaft. Endophallus short, with a ligula greatly degenerated into a small narrow patch of pigmented granules which is small corn-like sclerotized apically; copulatory piece entirely absent; praeputial pad moderate.

Female genitalia with bursa copulatrix very large and well developed, but not separated. Vaginal apophysis with inner plate very small ovoid; outer plate large and broad, somewhat oval.

Length: Male 22-26mm, female 24-29mm.

Locality: CN : Mt. Kyeryongsan (=Mt. Ge-Ryong<sup>⑤</sup>, Mt. Gyeryong<sup>⑦</sup>).

GB : Mt. Hwanghaksan, Mt. P'algongsan, Mt. Sobaeksan (=Mt. So-Baeg<sup>⑥</sup>).

GN : Mt. Chirisan, Mt. Kayasan.

GW : Mt. Odaesan (=Mt. O-Aae<sup>④</sup>), Mt. Sölaksan (=Mt. Seol-Ag<sup>③</sup>), Mt. Tut'asan.

HN : Wönsan (=Gensan<sup>①</sup>, Wönsan<sup>②</sup>).

JB : Mt. Tögyusan.

Distribution: Korea.

Remark: The detailed type-locality in Korea of the present species was not given in Reitter's description, but it was based on the collection of Staudinger et Bang-Haas as in the same cases of other some carabids, so it may be possibly representing from northeastern area of Korean Peninsula. But Breuning's (1932) description based on the material from Gensan (=Wönsan; HN) shows a quite different character from those of the specimens of central and southern Korea. According to him, 5th to 8th segments of the male antennae have ventral hairless areas, pronotum and elytral margins are slightly bronzy or greenish polished. If his observation is fairly right, the central and southern population may become at least a different subspecific status because its antennae have 6th to 9th segments bearing ventral hairless areas, and the dorsum has not any metallic luster.

Therefore, the subspecific separation for this species is reserved here tentatively till the chance for the examination of Reitter's type series and Breuning's material from Gensan (=Wönsan; HN).

## 22. *Leptocarabus (Adelocarabus) seishinensis* Lapouge, 1931

청진민줄딱정벌레 (청진딱정벌레)

*Leptocarabus (Adelocarabus) seishinensis* Lapouge, 1931, Gen. Ins. 192:597.

Type-locality: Korea (Ch'öngjin; HN).

Description: General coloration black, or rarely dark rufous, fore body slightly polished, with elytra mat except marginal areas which are polished.

Head moderately stout posteriorly; frontal impressions deep prominent, rather smooth anteriorly, more or less rugose posteriorly, usually reaching middle of eyes. Labrum polished, with anterior margins deeply emarginate mesally. Vertex slightly convex between frontal impressions, somewhat polished, rather transversely concave to posterior margins of eyes, with punctures very fine or vestigial, rugae often present. Mandibles with dorsal surface smooth, with very fine sparse micropunctures. Mixillary palpi moderately long, with apical segments gently extending distally, about as long as penultimate segments. Labium with mentum generally lacking setae; median tooth short subtriangular, about as long as or sometimes very slightly exceeding its lateral lobes; lateral palpi moderately long, with apical segments gently extending distally, apparently shorter than penultimate segments (ratio, 1: 1.3). Submentum usually with 2 pairs or sometimes less of gular setae present.

Antennae very long, usually reaching behind middle of elytra in male; 5th to 8th segments with ventral hairless deeply depressed areas in male, but 9th is vestigially depressed.

Pronotum subquadrate, wider than long (ratio, 1: 0.9), widest before middle, rather flat mesally, usually with 2 setae on each side; anterior margin more or less roundly emarginate, linearly defined; lateral margins very narrow and sharply defined, even broad roundly contracted anteriorly, apparently gently sinuate before hind angles; hind angles subtriangularly protrudent well posteriorly, usually obliquely bent downwards; punctures often prominent, more or less dense and partially rugulose; basal foveae deep prominent, often continuous to transverse depressions.

Elytra ovoid to elongate oval, slightly convex mesally and rather abruptly roundly declined

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to lateral margins basally, broadest middle to apical third, usually mat; lateral margins slightly broad in female, with grounds outside umbilicate series more glossy than elsewhere; sculpture triploid, pentaploid or heptaploid, heterodyname, with intervals at most weakly raised or sometimes sharply defined; primaries weakly costate and catenulate; secondaries often very slightly higher than tertiaries and quaternaries, or samely costate as tertiaries; quaternaries, when present, usually lower than any other intervals. Hind wings very narrowly atrophied, tapering apically.

Chaetotaxy of hind coxae generally trisetose, with postero-proximal setae always present. Hind trochanters smooth, or much rarely with a setiferous pore on each venter.

Male aedeagus with shaft roundly arcuate; end piece short and small, slightly bent at base, rather deep roundly terminated; ostium with a papilla-like basal lobe, slightly shorter than half length of shaft. Endophallus short, with a ligula greatly degenerated into a small patch of pigmented granules; copulatory piece entirely absent; praeputial pad moderate.

Female genitalia with bursa copulatrix not separated. Vaginal apophysis with inner plate very small ovoid; outer plate large and broad, more or less roundly oval.

Length: Male 19-24mm, female 20-26mm.

Distribution: Korea.

Key to subspecies of *Leptocarabus* (*Adelocarabus*) *seishinensis*

1. Elytra with sculpture pentaploid or rarely heptaploid; secondary and tertiary intervals often at most weakly elevated . . . . . *Leptocarabus* (*Adelocarabus*) *seishinensis seishinensis*  
— Elytra with sculpture usually triploid or rarely pentaploid; secondary and tertiary intervals often more or less sharply defined . . . . .  
. . . . . *Leptocarabus* (*Adelocarabus*) *seishinensis seunglaki* subsp. nov.

22-1. *Leptocarabus* (*Adelocarabus*) *seishinensis seishinensis* Lapouge, 1931 청진만줄딱정벌레 (청진줄딱정벌레)

*Leptocarabus* (*Adelocarabus*) *seishinensis* Lapouge, 1931, Gen. Ins. 192:97 <sup>①</sup>.

*Carabus* (*Carabus* Sect. *Eucarabus*) *seishinensis*: Breuning, 1932, Best.-Tab. eur. Col. 104: 258-259 <sup>①</sup>.

*Carabus* (*Adelocarabus*) *seishinensis*: Yano, 1941, Nipp. Koch. 4(1):19 <sup>①-⑤</sup>.

*Eucarabus seishinensis*: Beheim et Breuning, 1943, Mitt. Münchn. Ent. Ges. 33(1):6, pl. 2 (9) <sup>②</sup>.

*Carabus seishinensis*: Cho, 1963b, Journ. Nat. Acad. Sci. Rep. Kor. Nat. Sci. Ser. 4:82 <sup>⑥-⑪</sup>.

*Carabus procerulus* (nec Chaudoir): Ku, 1963, Kor. Journ. Zool. 6(1):27 <sup>⑫</sup>.

*Carabus seishinensis*: Zool. Soc. Kor., 1968, Nom. An. Kor. 2:97 (Korea).

*Carabus wulffiusi* (nec Morawitz): Kim et Kim, 1972, Rep. Kor. Ass. Cons. Nat. 5:76 <sup>⑬</sup>.

*Carabus* (*Adelocarabus*) *seishinensis*: Nakane, 1977a, Nat. & Ins. 12(10): 8 (Korea).

*Eucarabus seishinensis seishinensis*: Lee, 1977, Kor. Journ. Ent. 7(2):37 <sup>⑭-⑲</sup>.

*Eucarabus seishinensis*: Yoon et Nam, 1979, Rep. Kor. Ass. Cons. Nat. 17:144 <sup>⑳</sup>.

*Carabus procerulus* (nec Chaudoir) + *Eucarabus seishinensis*: Yoon et Nam, 1980, Bas. Plan. Constr. Nat. stud. K'youngg. Prov.: 38 <sup>㉑</sup>.

Type-locality: Korea (Ch'öngjin: HB).

Description: Pronotum usually broad roundly extending laterally before middle.

Elytral sculpture pentaploid or rarely heptaploid, with intervals often at most weakly elevated; quaternaries usually lower than other intervals.

Abdomen with transverse sulci prominent, or sometimes weakly interrupted mesally.

**Length:** Male 19-24mm, female 20-26mm.

**Locality:** CB : Mt. Songnisan.

CN : Mt. Kyeryongsan (=Mt. Gye-Ryong<sup>25</sup>, Mt. Gyeryong<sup>27</sup>).

GB : Mt. Hwanghaksan, Mt. P'algongsan, Mt. Sobaeksan (=Mt. So-Baeg<sup>26</sup>).

GG : Mt. Myŏngjisan<sup>23</sup> (=Mt. Myeong-Ji<sup>21</sup>, Mt. Myung-Ji<sup>12</sup>), Mt. Pukhansan (Mt. Bug-Han<sup>24</sup>), Seoul, Mt. Soyosan (=Mt. So-Yo<sup>22</sup>, Soyo-san<sup>11</sup>), Mt. Tobongsan, Tŏgam (=Deog-Am<sup>23</sup>).

GN : Mt. Kayasan, Mt. Yŏngch'wisan.

GW : Mt. Ch'iaksan (=Mt. Chi-Ag<sup>13</sup>), Mt. Kŭmgangsan (=Kumkang-san<sup>9</sup>), Mt. Odaesan (=Mt. O-Dae<sup>17</sup>), Mt. Pangdaesan (=Mt. Bang-Dae<sup>15</sup>), Mt. Sogŭmgang (=So-Geum-Gang<sup>13</sup>), Mt. Sŏlaksan (=Mt. Seol-Ag<sup>15</sup>), Mt. T'aebaeksan (=Mt. Tae-Baeg<sup>20</sup>).

HB : Ch'ŏngjin (=Chungzin<sup>6</sup>, Seishin<sup>1</sup>), Chuŭl (=Suotsu<sup>3</sup>), Mt. Kwanmobong (=Gwan-Mo-Bong<sup>14</sup>, Kwanmo-san<sup>7</sup>), Mt. Mayisan (=Mt. Baji<sup>4</sup>), Onp'o (=Ompo<sup>2</sup>), P'osangdong (=Pojodo<sup>5</sup>).

HN : Songhŭng (=Songhung<sup>8</sup>).

JB : Mt. Tŏgyusan (=Gucheondong<sup>13</sup>).

JN : Mt. Chogyesan.

PB : Huch'ang (=Fuchang<sup>18</sup>).

**Distribution:** Korea.

**22-2. *Leptocarabus (Adelocarabus) seishinensis seunglaki* Kwon et Lee, subsp. nov.**

승락정진민줄딱정벌레

**Description:** Pronotum often less roundly extending laterally before middle.

Elytral sculpture usually triploid or rarely pentaploid, with intervals often more or less sharply defined; secondaries and tertiaries usually samely costate; quaternaries, if present, much narrower and lower than other intervals.

Abdomen with transverse sulci strikingly prominent, sharply carved and seldom interrupted mesally.

**Length:** Male 19-22mm, female 21-23mm.

**Type-examined:** Holotype male, Mt. Chirisan, GN, S. Korea, 6, VI, 1983, coll. Y.J. Kwon; paratypes: 7 males, 4 females, same data as holotype; 1 male, 13, VII, 1981, the same locality and collector.

**Remark:** This new subspecies may be distinguishable from the nominate one by the structure of elytral sculpture.

**23. *Leptocarabus (Adelocarabus) vogtianus* (Beheim et Breuning, 1943)** 원산민줄딱정벌레

*Eucarabus vogtianus* Beheim et Breuning, 1943, Mitt. Münchn. Ent. Ges. 33(1):5-6, pl.2 (8)<sup>①</sup>.

**Type-locality:** Korea (Wŏnsan: HN).

**Description:** General coloration and external feature allied to *semiopacus* and *seishinensis*.

Head moderately stout posteriorly. Mandibles less arcuate. Pronotum rather thick and coarsely punctulate, with lateral margins roundly extending and gently sinuate before hind angles;

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hind angles broad roundly protrudent posteriorly.

Elytra with intervals less costate than in *seishinensis*, but more prominent than in *semiopacus*.

Male aedeagus strikingly stout and rather straight at middle; end piece extraordinarily short and pointed.

Length: Male 21mm.

Locality: HN : Wönsan (=Gensan<sup>①</sup>).

Distribution: Korea.

24. *Leptocarabus (Adelocarabus) gossare* (Haur, 1879) 산꼬마줄딱정벌레

*Carabus gossare* Haur, 1879, Ent. Nachr. 5:114.

Type-locality: U.S.S.R. (Maritime Territory: Amur).

The nominate subspecies had been placed into the synonymy of *Carabus raddei* Morawitz, 1862 after Breuning (1932), and later Beheim et Breuning (1943) placed it as a valid one.

24-1. *Leptocarabus (Adelocarabus) gossare kulzeri* (Breuning, 1932)

참산꼬마줄딱정벌레 (주울딱정벌레, 주울딱정벌레, 산꼬마줄딱정벌레)

*Carabus (Carabus Sect. Eucarabus) kulzeri* Breuning, 1932, Best.-Tab. eur. Col. 104:225-256<sup>①</sup>

*Carabus (Aulonocarabus) kulzeri* (sic): Yano, 1941, Nipp. Koch. 4(1): 20<sup>②</sup>

*Eucarabus gossare kulzeri*: Beheim et Breuning, 1943, Mitt. Münchn. Ent. Ges. 33(1):5<sup>③</sup>

*Carabus kulzeri*: Cho, 1957, Hum. & Sci., Nat. Sci. Kor. Univ. 2:179 (Korea).

*Carabus kulzeri*: Cho, 1963b, Journ. Nat. Acad. Sci. Rep. Kor. Nat. Sci. Ser. 4:81<sup>④</sup>

*Carabus kulzeri*: Zool. Soc. Kor., 1968, Nom. An. Kor. 2:97 (Korea).

*Eucarabus kulzeri kulzeri*: Lee, 1977, Kor. Journ. Ent. 7(2):37<sup>⑤</sup>

Type-locality: Korea (Onp'o: HB).

Description: General coloration polished black, with elytra dark coppery brown. Body usually very elongate oval, rather slender.

Head moderately stout posteriorly; frontal impressions deep prominent, reaching anterior margins of eyes. Labrum polished, deeply emarginate mesally. Vertex usually densely and fine rugosely punctulate, rather transversely concave to posterior margins of eyes. Eyes prominent, protrudent well laterally. Mandibles with dorsal surface smooth. Maxillary palpi moderately long, with apical segments gently extending distally, about as long as penultimate segments. Labium with mentum generally lacking setae; median tooth short subtriangular, about as long as its lateral lobes; labial palpi moderately long, with apical segments gently extending distally, apparently shorter than penultimate segments which are generally bisetose. Submentum with a pair or more of gular setae present.

Antennae moderately long, usually reaching one-third of elytra in male; 6th to 8th segments with ventral hairless depressed areas in male.

Pronotum somewhat quadrate, wider than long (ratio, 1: 0.8), widest before middle, rather flat mesally, usually with 2 setae on each side; anterior margin very slightly emarginate, weak linearly defined; lateral margins very narrow and sharply defined, somewhat roundly contracted anteriorly, gently sinuate before hind angles; hind angles subtriangularly protrudent well posteriorly; punctures rather prominent and sparse, deeply subrugose; basal foveae rather shallow and somewhat linearly grooved.

Elytra very elongate oval, somewhat slightly convex mesally, with sculpture often pentaploid heterodyname; primary intervals polished and rather comparatively strongly costate, and frequently catenulate; anterior intervals weaker than primaries and each forming a row of granules; lateral margins slightly broad and roundly raised, with shoulders moderately rounded; grounds finely granulose.

Chaetotaxy of hind coxae generally trisetose, with postero-proximal setae always present. Metaepisterna about as wide as long. Abdomen with ventral sulci vestigial, or weakly carved and interrupted mesally.

Male aedeagus roundly arcuate; end piece short and very broad, roundly terminated.

Length: Male 20-22mm, female 22-23mm.

Locality: HB : Chuŭl (=Chuul<sup>④</sup>), Mt. Kwanmobong (=Mt. Gwan-Mo-Bong<sup>⑤</sup>), Mt. Mayisan (=Mt. Baji<sup>②</sup>), Onp'o (=Gebirge bei Ompo<sup>①</sup>, Ompo 6,000 Fuss<sup>③</sup>).

Disbribution: Korea (Northeastern part).

Genus 9. *Hemicarabus* Géhin, 1876 애막정벌레 속

*Hemicarabus* Géhin, 1876, Cat. Col. car. trib. Car.: 25.

Type-species: *Carabus nitens* Linnaeus, 1758

Type-locality: Europe.

Diagnosis: Body generally very small to small sized. Coloring black with often metallic luster.

Head comparatively small, somewhat narrow anteriorly; frontal impressions less rugosely punctulate, usually continuous to periorbital impressions; vertex more or less flat, rather continuous to frons or very obscurely concave to posterior margins of eyes, with deep punctures. Mandibles rather short and broad, with inner margins more or less straight except apices which are abruptly bent inwards and pointed; dorsal surface often sparsely punctulate or weakly subrugose. Maxillary palpi comparatively short to markedly short; penultimate segments shorter than or normally exceeding apical segments. Labium generally without setae, with a median tooth on mentum somewhat sharp triangular; labial palpi normal to markedly short, with penultimate segments bisetose. Gula bearing with generally a pair of setae. Eyes usually prominent, protruding well laterally.

Antennae short, with 2nd and 3rd segments broadly depressed at base and carinate at inner sides; hairy segments simple, without ventral hairless areas in both sexes.

Pronotum wider than long, strongly convex mesally, usually trisetose laterally, with hind angles less produced; punctures fine or sparse, deeply sculptured; foveae broad to obscure.

Elytra usually ovoid, with humeral serrations at lateral margins; sculpture generally triploid heterodyname; apical emarginations always absent. Hind wings atrophied, somewhat broad and thick.

Fore tibiae with upper apical corner normal to sharply produced. Hind coxae with postero-proximal setae generally absent. Hind trochanters smooth, without any setiferous pore. Abdomen with transverse sulci prominently sculptured, often interrupted mesally.

Male aedeagus slender, cylindrical, evenly curved toward apex, with a distinct ostium lobe; ligula small and well sclerotized, often with a pointed apex; endophallus comparatively long, widening toward apex, its dorsal wall and ventral portion broadly covered with setulae or micro-piles; copulatory piece entirely absent.

Female genitalia with bursa copulatrix usually not defined. Vaginal apophysis with a broad outer plate, but inner plate not developed.

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Key to subgenera of *Hemicarabus*

1. Maxillary palpi with penultimate segments small, shorter than apical segments. Fore tibiae with upper apical corner sharply produced. Male aedeagus with ostium lobe simple . . . . . *Hemicarabus*
- Maxillary palpi with penultimate segments moderate, not shorter than apical segments. Fore tibiae with upper apical corner obtuse. Male aedeagus with ostium lobe bilobate . . . . . *Homoeocarabus*

Subgenus *Hemicarabus* Géhin, 1876 애딱정벌레 아속

*Hemicarabus* Géhin, 1876, Cat. Col. car. trib. Car.: 25.

Type-species: *Carabus nitens* Linnaeus, 1758

Type-locality: Europe.

**Diagnosis:** Body broad, generally very small to small sized. Coloring black with metallic luster.

Head small, somewhat narrow anteriorly; frontal impressions less lugosely punctulate, often slightly continuous to periorbital impressions; vertex more or less flat, rather continuous to frons or very obscurely concave transversely to posterior margins of eyes, with deep punctures. Mandibles rather short and broad, with inner margins more or less straight except apices which are abruptly bent inwards and pointed, with dorsal surface often sparsely punctulate. Maxillary palpi markedly short, with penultimate segments small and shorter than apical segments. Labium generally without setae, with a median tooth on mentum somewhat sharply pointed; labial palpi markedly short, with penultimate segments bisetose. A pair of gular setae present. Eyes prominent, protruding well laterally.

Antennae short, with 2nd and 3rd segments broadly depressed at base and carinate at inner side; hairy segments simple, without ventral hairless areas in both sexes.

Pronotum wider than long, strongly convex mesally, evenly roundly arcuate and generally trisetose laterally, with hind angles broad and less produced; punctures fine or sparse, deeply sculptured; fovea broad to obscure at each base.

Elytra usually ovoid, with humeral serrations at lateral margins; sculpture generally triploid heterodynamic; secondary intervals far less higher than primaries; preapical emarginations entirely absent. Hind wings atrophied, broad and thick.

Fore tibiae with upper apical corner sharply produced. Hind coxae with postero-proximal setae generally absent. Hind trochanters smooth, without any setiferous pore. Abdomen with transverse sulci prominent, often interrupted mesally.

Male aedeagus slender, cylindrical, evenly curved toward apex, with an ostium lobe simple; ligula small and well sclerotized, with a pointed apex; endophallus widening toward apex, its dorsal wall and ventral portion broadly covered with setulae or micropiles; copulatory piece always absent.

Female genitalia with bursa copulatrix not defined. Vaginal apophysis with a broad outer plate; inner plate not developed.

Key to species of *Hemicarabus*

1. Elytra with primary intervals prominent ovoid tubercular, secondaries somewhat linearly present, but tertiaries are obscure only scattering numerous very fine granules . . . . . *Hemicarabus (Hemicarabus) tuberculosus*

- Elytra with primary intervals less prominent, secondaries and tertiaries somewhat granular, often irregularly combined together . . . . . *Hemicarabus (Hemicarabus) macleayi*

25. *Hemicarabus (Hemicarabus) tuberculatus* (Dejean et Boisduval, 1829) 애막정벌레 (애기막정벌레)

- Carabus tuberculatus* Fischer, 1827, Ent. Imp. Russ. 3:186, pl. 7C (1) nom. praecoc.  
*Carabus tuberculatus* Dejean et Boisduval, 1829, Icon. Col. d'Eur. 1:359, pl. 50 (4).  
*Carabus granosus* Chaudoir, 1844, Bull. Soc. Nat. Mosc. 17:437.  
*Carabus Etholeni* Mannerheim, 1849, Ibid. 22:226.  
*Carabus tuberculatus*: Heyden, 1887, Hor. Soc. Ent. Ross. 21:246 (Korea).  
*Carabus tuberculatus*: Bates, 1888, Proc. Zool. Soc. Lond.: 368 <sup>①</sup>.  
*Carabus tuberculatus*: Lapouge, 1911, Misc. Ent. 19(1): 2 (Ile Quelpart).  
*Carabus tuberculatus* + *C. tuberculatus granosus*: Kano, 1923, Ins. World. 27 (315):379, 384 <sup>②-④</sup>.  
*Carabus tuberculatus*: Kano, 1924, Ibid. 28 (326): 348 (Korea).  
*Carabus tuberculatus*: Okamoto, 1924, Bull. Agr. Exp. Stat. Gov. Gen. Chos. 1(2):161 (Quelpart Island).  
*Carabus (Hemicarabus) tuberculatus*: Csiki, 1927, Col. Cat. 91:184 (Korea).  
*Hemicarabus (Hemicarabus) tuberculatus*: Lapouge, 1931, Gen. Ins. 192:583 (Corée).  
*Carabus (Hemicarabus) tuberculatus* f. *granosus*: Matsumura, 1931, 6,000 Ill. Ins. Jap.: 109 (Korea).  
*Carabus (Hemicarabus) Sect. Hemicarabus tuberculatus*: Breuning, 1933, Best.-Tab. eur. Col. 107:853-855 <sup>⑤-⑥</sup>.  
*Carabus tuberculatus*: Morita, 1936, Ent. World. 4(34):854 <sup>⑦</sup>.  
*Carabus tuberculatus granosus*: Mochizuki et Tsunekawa, 1937, Journ. Chos. Nat. Hist. Soc. 22:76 <sup>⑧</sup>.  
*Carabus tuberculatus granosus*: Hirayama, 1940, Col. Ill. Col. 91, p1.32(22) (Korea).  
*Carabus (Hemicarabus) tuberculatus*: Kano, 1941, Nipp. Koch. 4(1):17-18, <sup>①, ⑨-⑫</sup>.  
*Carabus tuberculatus*: Habu, 1950, Icon. Ins. Jap. ed. sec. ref.:973, f.2770 (Korea).  
*Hemicarabus tuberculatus*: Nakane et Iga, 1955, Col. Ill. Ins. Jap. Col.: 85, p1.30(5) (Korea).  
*Carabus tuberculatus*: Cho, 1957, Hum. & Sci., Nat. Sci. Kor. Univ. 2:181 (Korea).  
*Hemicarabus tuberculatus*: Nakane, 1962, Ins. Jap. 2(3):18-19, p1.1(6) (Korea, Is. Chejudo).  
*Carabus tuberculatus*: Cho, 1963a, Hum. & Sci., Nat. Sci. Kor. Univ. 6:200 (Quelpart Island).  
*Carabus tuberculatus*: Cho, 1963b, Journ. Nat. Acad. Sci. Rep. Kor. Nat. Sci. Ser. 4:85 <sup>⑬</sup>.  
*Hemicarabus tuberculatus*: Nakane et al., 1966, Comm. Ins. Jap. Co.: 44, pl. 20(11) (Korea, Is. Chejudo).  
*Carabus tuberculatus*: Cult. & Inf. Min., 1968, Rep. Acad. Surv. Mt. Hanlasan:258 <sup>⑭</sup>.  
*Carabus tuberculatus*: Zool. Soc.-Kor., 1968, Nom. An. Kor. 2:98 (Korea).  
*Carabus tuberculatus*: Cho, 1969, Ill. Encycl. Faun. & Flor. Kor. 10:125, p1.3(5) (N. Korea).  
*Carabus tuberculatus*: Seok, 1970, Chej. Ch'ongs. 5:76 (Is. Chejudo).  
*Carabus tuberculatus*: Kim et Kim, 1971, Rep. Kor. Ass. Cons. Nat. 4:154 <sup>⑮</sup>.  
*Carabus granulatus* (nec Linnaeus): Komiya, 1971, Res. Bull. Plant Prot. 14:60, 63 <sup>⑯</sup>.  
*Hemicarabus (Hemicarabus) tuberculatus*: Ishikawa, 1973, Bull. Nat. Sci. Mus. Tokyo. 16(2): 199.  
*Carabus granulatus telluris* (nec Bates): Lee et Kwon, 1974, Nat. & Lif. 4:30 <sup>⑰</sup>.  
*Carabus (Hemicarabus) tuberculatus*: Nakane, 1977a, Nat. & Ins. 12(9): 4 (Korea, Is. Chejudo).  
*Hemicarabus tuberculatus tuberculatus*: Lee, 1977, Kor. Journ. Ent. 7(2):38 <sup>⑱-⑲</sup>.  
*Hemicarabus tuberculatus*: Nakane, 1977b, Bull. Nat. Sci. Mus. Ser. A (Zool.) 3(4):241 <sup>⑳</sup>.  
*Carabus tuberculatus*: Kim, 1978, Distr. Atl. Ins. Kor.:2:23, p1.6 (CA 08) <sup>㉑, ㉒-㉓</sup>.

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*Carabus tuberculosus*: Ed. Dep. Hokuryukan, 1979, Ill. Ins. Jap. Stud. ed.:341 (Korea).

**Type-locality:** U.S.S.R. (E. Siberia: Altai).

**Description:** General coloration black, usually with coppery red luster on head and pronotum, rarely bearing greenish tint peripherally; elytra usually bearing dark coppery or sometimes aeneous tinges, with margins coppery red, golden or golden green.

Head somewhat flat dorsally, punctulate; frontal impressions shallow, less rugosely punctulate, not exceeding middle of eyes, often slightly continuous to periorbital impressions; vertex obscurely concave transversely to posterior margins of eyes, interrupted and somewhat convex mesally. Mandibles often fine sparsely punctulate and obscurely subrugose dorsally. Maxillary palpi with apical segments somewhat stout subtriangular, distinctly longer than penultimate segments (ratio, 1: 0.75). Labium with mentum lacking setae; median tooth somewhat sharply pointed; labial palpi markedly short, with apical segments stout and shorter than penultimate segments (ratio, 1: 1.2). Gular setae usually a pair.

Antennae short, a little exceeding shoulders of elytra; hairy segments dark rufous, without ventral hairless areas in both sexes.

Pronotum slightly wider than long (ratio, 1: 0.8), strongly convex mesally, usually trisetose laterally, with lateral margins even roundly arcuate; hind angles broad and less produced; punctures deep and fine, somewhat rugosely sculptured posteriorly.

Elytra ovoidal, broadest at apical two-fifths, with sculpture triploid, heterodyname; primary intervals forming a row of large prominent ovoid to elongate tubercles, with a series of 9 to 13 small foveae which usually bearing golden reddish coppery luster; secondaries forming a row of coarse granules or costae; tertiaries almost evanescent or forming a vestigial row of fine granules; surface numerous granules. Hind wings reduced, with veins thickened.

Fore tibiae with upper apical corner sharply produced. Chaetotaxy of hind coxae usually bisetose, lacking postero-proximal setae.

Male aedeagus gently arcuate, slender and cylindrical, with end piece prominently longer than wide and roundly terminated; ostium lobe simple round; ligula small and narrow, well sclerotized, with a pointed apex; endophallus extending distally, without any copulatory piece.

Female genitalia with bursa copulatrix large, but not defined. Vaginal apophysis with an outer plate somewhat shield-like, usually narrower posteriorly; inner plate not developed.

**Length:** Male 17-20mm, female 19-23mm.

**Locality:** GB : Mt. Sobaeksan <sup>①</sup>.

GG : Mt. Aengmubong (=Mt. Aeng-Mu-Bong <sup>②</sup>), Ildaeri (=Il-Dae-Ri <sup>⑤</sup> : Yang-Ju-Gun <sup>⑥</sup>), Mt. Kodŭngsan <sup>③</sup>, Mt. Kwanaksan <sup>④</sup>, Kwangnŭng (=Gwang-Neung <sup>②</sup>), Mt. Pogaesan <sup>⑧</sup>, Seoul <sup>③</sup> (=Keijo <sup>⑨</sup>), Mt. Wangbangsan.

GN : Mt. Chirisan.

GW : Mt. Ch'iaksan, Kangch'on (=Gang-Chon <sup>②</sup>), Mt. Odaesan <sup>⑤</sup> (=Puktaesa <sup>⑤</sup>, Mt. O-Dae <sup>①</sup>), Mt. Pangdaesan (=Mt. Bang-Dae <sup>⑥</sup>), P'yŏngch'ang <sup>④</sup>.

HB : Ch'ŏngjin <sup>⑨</sup> (=Cheong-Jin <sup>⑩</sup>, Chungzin <sup>⑩</sup>, Seishin <sup>⑤</sup>), "Pung-tung" <sup>⑥</sup>.

HN : Pujŏllyŏng <sup>⑩</sup> (=Bu-Jeon-Ryeong <sup>⑩</sup>), Sambanghyŏp (=Sanboukyo <sup>⑪</sup>), Mt. Samnipsan, Sŏgwangsa (=Shakuoji <sup>⑪</sup>), Wŏnsan <sup>②</sup> (=Gensan <sup>①</sup>).

JB : Kunsan (=Gunzan <sup>⑦</sup>).

JJ : Cheju <sup>⑤</sup>, Mt. Hallasan <sup>⑩</sup> (=Mt. Hal-La <sup>⑦</sup>, Mt. Hallasan <sup>⑩</sup>, Mt. Hanna <sup>②</sup>), Sanch'ŏndan <sup>⑦</sup>, Sŏgwip'o (=Seikiho <sup>⑩</sup>).

PN : P'yŏngyang <sup>④</sup>.

**Distribution:** Korea, Japan (Hokkaido, Honshu, Kyushu, Shikoku), China (Manchuria), U.S.S.R.

(Maritime Territory, E. Siberia, Sachalin).

**Remark:** The population of Mt. Hallasan in Is. Chejudo (=Is. Quelpart) is separable from that of Korean Peninsula proper in having primary tubercles on elytra usually more prominently oval, and in having secondaries sometimes well sculptured of which in the latter population often somewhat evanescent at apical portion. But these superficial differences are greatly variable and furthermore the male genitalic characters haven't any significant diagnoses to distinguish them respectively.

The authors also compared them with Japanese material from Hidaka, Hokkaido and couldn't find any significance for naming a sufficient subspecific status to the race of Is. Chejudo. Indeed, the end piece of male aedeagus is considerably variable even in the same deme of the present species.

26. *Hemicarabus (Hemicarabus) macleayi* (Dejean, 1826) 청단에딱정벌레 (천지딱정벌레, 청단에기줄딱정벌레)

*Carabus Mac Leayi* Dejean, 1826, Spec. gen. Col. 2:485.

**Type-locality:** U.S.S.R. (E. Siberia).

The nominate subspecies is represented mainly from northern areas of Far East Asia, and is separated from the following subspecies in being generally less prominent primary tubercles on elytra.

Breuning's (1933) record from Mt. Paik-to-san (=Mt. Paektusan; HB) for the nominate subspecies may be possibly incorrect and it would be more reasonable that the above must be treated with the following subspecies he described based on the same locality and Hoeryong (=Hoeryong; HB).

26-1. *Hemicarabus (Hemicarabus) macleayi coreensis* (Breuning, 1933)

백두청단에딱정벌레 (천지딱정벌레붙이, 백두산에기줄딱정벌레)

*Carabus (Hemicarabus Sect. Hemicarabus) mac-leayi* n. *mac-leayi* + *C. (C. S. H.) m. m. coreensis* Breuning, 1933, Best.-Tab. Eur. Col. 107:857-858<sup>①-②</sup>.

*Carabus mac-leayi* + *C. m. corensis* (sic): Cho, 1957, Hum. & Sci., Nat. Sci. Kor. Univ. 2:181 (Korea).

*Carabus mac-leayi* + *C. m. corensis*: Cho, 1963b, Journ. Nat. Acad. Sci. Rep. Kor. Nat. Sci. Ser. 4:85<sup>③-④</sup>.

*Carabus mac-leayi* + *C. m. corensis* (sic): Zool. Soc. Kor., 1968, Nom. An. Kor. 2:98 (Korea).

*Hemicarabus macleayi macleayi* (partim) + *H. m. corensis*: Lee, 1977, Kor. Journ. Ent. 7(2): 38-39<sup>⑤-⑧</sup>.

*Hemicarabus macleayi*: Yasuda et Okajima, 1980, Beetl. World.: 9, 137 (North Korea).

**Type-locality:** Korea (Mt. Paektusan and Hoeryong; HB).

**Description:** General coloration black, usually with blue greenish to greenish metallic or often golden reddish metallic luster on dorsum, marginal areas bearing golden reddish metallic luster on pronotum and elytra.

Head somewhat flat dorsally, narrow anteriorly, punctulate; frontal impressions shallow, less rugosely punctulate, not exceeding middle of eyes, often slightly continuous to periorbital impressions. Vertex obscurely concave transversely to posterior margins of eyes, somewhat interrupted mesally. Mandibles often fine sparsely punctulate dorsally. Maxillary palpi with apical segments

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somewhat stout subtriangular, distinctly longer than penultimate segments (ratio, 1:0.75). Labium with mentum usually lacking setae, but rarely present; median tooth somewhat sharply pointed; labial palpi markedly short, with apical segments stout and shorter than penultimate segments (ratio, 1:1.1). Gular setae usually a pair.

Antennae short, a little exceeding shoulders of elytra; hairy segments much dark rufous, without ventral hairless areas in both sexes.

Pronotum wider than long (ratio, 1:0.75), convex mesally, usually trisetose laterally, with lateral margins even roundly arcuate; hind angles broadly obtuse; punctures deep prominent, somewhat sparse.

Elytra slightly elongate oval, broadest middle to apical third; sculpture triploid heterodyname, rather irregular; primary intervals forming a row of large elongate oval tubercles, sometimes irregularly convex, with a series of 9 to 12 small foveae which usually bearing golden reddish coppery luster; secondaries and tertiaries often forming a row of small round tubercles irregularly fused with together, or with primaries.

Fore tibiae with upper apical corner sharply produced. Chaetotaxy of hind coxae usually bisetose, lacking postero-proximal setae.

Male aedeagus strongly arcuate apically, slender and cylindrical, with end piece long and a little gently narrowed apically in lateral shape, deep roundly terminated; ostium lobe simple round; ligula small and elongate narrow, well sclerotized, with a pointed apex; endophallus extending distally, without any copulatory piece.

Female genitalia with bursa copulatrix large, but not defined. Vaginal apophysis with an outer plate narrower posteriorly, somewhat shield-like; inner plate not developed.

**Length:** Male 15-16mm, female 16-19mm.

**Locality:** HB : Hapsu (=Hab-Su<sup>⑥</sup>), Hoeryŏng (=Hoe-Ryeong<sup>⑧</sup>, Hoeryung<sup>④</sup>, Hoirjong<sup>②</sup>  
Mt. Paektusan (=Mt. Baeg-Du<sup>⑦</sup>, Mts. Paik-to-san<sup>①</sup>, Paiktu-san<sup>③</sup>), Mt. Turyusan.  
HN : Unsuryŏng (Mt. Un-Su-Ryeong<sup>⑤</sup>).

**Distribution :** Korea (Northeastern part).

Subgenus *Homoeocarabus* Reitter, 1896

점줄에 딱정벌레 아속

*Homoeocarabus* Reitter, 1896, Best.-Tab. eur. Col. 34:144.

Type-species: *Carabus maeander* Fischer, 1822

Type-locality: U.S.S.R. (E. Siberia).

**Diagnosis:** Body somewhat broad, generally small sized. Coloring black with often metallic luster.

Head small, narrow anteriorly; frontal impressions deep prominent, less rugosely punctulate, usually continuous to periorbital impressions; vertex more or less flat, rather continuous to frons or very obscurely concave to posterior margins of eyes, with deep punctures. Mandibles rather short and broad, with inner margins more or less straight except apices which are abruptly bent inwards and pointed, with dorsal surface smooth and sparsely finely punctulate. Maxillary palpi comparatively short, with penultimate segments moderate, not shorter than apical segments. Labium generally without setae, with a median tooth on mentum somewhat sharp triangular; labial palpi comparatively short, with penultimate segments bisetose. A pair of gular setae present. Eyes usually well protruding laterally.

Antennae short, with 2nd and 3rd segments broadly depressed at base and carinate at inner sides; hairy segments simple, without ventral hairless areas in both sexes.

Pronotum markedly wider than long, convex mesally, usually trisetose laterally, with hind angles broad and less produced; punctures close and deeply sculptured; foveae narrow, deep

concave.

Elytra ovoid elongate, with humeral serrations at lateral margins; sculpture generally triploid heterodyname; secondary intervals linear, highly carinate; preapical emarginations entirely absent. Hind wings atrophied, broad and thick.

Fore tibiae with upper apical corner obtusely terminated. Hind coxae with postero-proximal setae generally absent. Hind trochanters smooth, without any setiferous pore. Abdomen with transverse sulci prominently sculptured, often interrupted mesally.

Male aedeagus slender, cylindrical, roundly curved distally, with an ostium lobe bilobate; ligula small and well sclerotized; endophallus widening toward apex, its dorsal wall and ventral portion broadly covered with setulae or micropiles; copulatory piece entirely absent.

Female genitalia with bursa copulatrix not defined. Vaginal apophysis with a broad outer plate, inner plate not developed.

**27. *Hemicarabus (Homoeocarabus) maeander* (Fischer, 1822)** 완충에 딱정벌레 작은 완충에 딱정벌레

*Carabus Maeander* Fischer, 1822, Ent. Imp. Russ. 1:103, pl.10(26).

**Type-locality:** U.S.S.R. (E. Siberia: Nertschinsk).

The nominate subspecies is represented widely from East Siberia to North America, and is separated from the following new subspecies in having secondary intervals on elytra strikingly wavyly carinate. In the mainland of Korean Peninsula, there have been neither any collected record nor material, hitherto.

**27-1. *Hemicarabus (Homoeocarabus) maeander quelpartensis* Kwon et Lee, subsp. nov.**

*Carabus maeander*: Komiya, 1971, Res. Bull. Plant Port. 14:60, 63<sup>(1)</sup>.  
*Eucarabus maeander maeander*: Lee, 1977, Kor. Journ. Ent. 7(2):38<sup>(2)</sup>.  
완충에 딱정벌레

**Description:** General coloration black, with dorsum usually dark brownish aeneous to often coppery brownish luster except raised part of elytra.

Head flat dorsally, somewhat gradually narrow anteriorly, finely punctulate; frontal impressions deep prominent, sometimes slightly tinted with greenish coppery luster, usually continuous to periorbital impressions. Vertex very obscurely concave transversely to posterior margins of eyes, somewhat interrupted mesally. Mandibles with dorsal surface smooth and very fine sparsely punctulate. Maxillary palpi with apical segments slightly extending distally, about as long as penultimate segments. Labium with mentum generally lacking setae; median tooth somewhat sharply pointed; labial palpi comparatively short, with apical segments slightly extending distally and apparently shorter than penultimate segments (ratio, 1: 1.35). A pair of gular setae present.

Antennae short, not exceeding one-fourth of elytra; hairy segments dark, simple, without ventral hairless areas in both sexes.

Pronotum apparently wider than long (ratio, 1: 0.65), slightly narrower anteriorly, usually trisetose laterally, with lateral margins more rounded anteriorly; hind angles broadly rounded; punctures deep and fine, closely sculptured.

Elytra elongate oval, broadest middle to apical third; primary intervals forming a row of large oval tubercles, with a series of 9 to 12 small shallow foveae which usually bearing same tint with the ground; secondary intervals linearly carinate, often slender and very slightly wavy, about as high as or somewhat lower than primaries, outer secondaries usually less raised and

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forming a row of granules; tertiaries generally evanescent, with surface numerous granules. Hind wings atrophied, membranes thickened.

Fore tibiae with upper apical corner obtusely terminated. Chaetotaxy of hind coxae generally bisetose, lacking postero-proximal setae.

Male aedeagus strongly curved apically, with end piece slender and slightly narrowed at neck in lateral shape, deep roundly terminated; ostium lobe broad and bilobate, nearly symmetrical; ligula small elongate oval, well sclerotized; endophallus extending apically, without any copulatory piece.

Female genitalia with bursa copulatrix large, but not defined. Vaginal apophysis with an outer plate somewhat ovate, well sclerotized mesally, abruptly extending at anterior margin; inner plate not developed.

**Length:** Male 17-18mm, female 17-20mm.

**Type-examined:** Holotype male, Mt. Hallasan (Paengnoktam, 1840-1850m), JJ, S. Korea, 20, VI, 1968, coll. S.M. Lee; paratypes: 2 males, 4 females, same data as holotype; Mt. Hallasan, 2 males, 2 females, 3, VI, 1968; 3 males, 2 females, 8, VI, 1968; 5 males, 4 females, 7-8, VI, 1972; 1 female, 25, VII, 1976; Mt. Hallasan (Sajaebidongsan), 1 female, 31, VII, 1972; all the same mountain and collector.

**Locality:** JJ : Mt. Hallasan (=Mt. Hanlasan<sup>①</sup>, Mt. Hal-La<sup>②</sup>).

**Remark:** The present new subspecies is distinguished from the nominate subspecies by the secondary intervals of elytra in being less wavy carinate, and is also separated from subsp. *paludis* Géhin, 1885 in Japan by the darker dorsum and less raised and slender secondary costae which are in the latter subspecies very stout and almost straight, and often higher than primary tubercles.

Komiya (1971) reported this race from Mt. Hallasan, JJ, for the first time in Korea, under the specific name without referring certain subspecific status. Lee (1977) also reported this one based on the material from the above examined, using the specific name.

Genus 10. *Scambocarabus* Reitter, 1896      큰두꺼비딱정벌레 속

*Scambocarabus* Reitter, 1896, Best.-Tab. eur. Col. 34:139.

Type-species: *Carabus kruberi* Fischer, 1822

Type-locality: U.S.S.R. (E. Siberia: Irkutsk).

**Diagnosis:** Body generally small to medium sized, rather convex, oval to elongate oval. Coloring polished black, or sometimes with metallic luster on dorsum.

Head generally moderately stout; frontal impressions prominent, reaching anterior margins of eyes or exceeding, rather rugose posteriorly; vertex rather evenly flat posteriorly. Mandibles generally stout and broad, with inner margins more or less straight except apices which are abruptly bent inwards and pointed; dorsal surface smooth, sometimes sparsely micropunctulate or slightly subrugose. Maxillary palpi with apical segments strikingly extending distally especially in male; penultimate segments small, apparently shorter than apical segments. Labium generally without setae on mentum, with a median tooth short subtriangular; labial palpi with apical segments strikingly triangularly extending distally, and with penultimate segments bisetose; submentum thickened transversely, with a pair or more of gular setae present. Eyes prominent, protrudent well laterally.

Antennae short to moderate, with 2nd segments usually exceeding half as long as 3rd segments, both slightly compressed basally; hairy segments simple in both sexes, or with ventral hairless areas in male.

Pronotum apparently wider than long, bisetose to multisetose laterally, with hind angles not

developed posteriorly; lateral margins narrow, sharply defined, very obscurely sinuate before hind angles or evenly contracted; punctures prominent, often rugulose; basal foveae small and shallow.

Elytra ovoid to slightly elongate oval, strongly convex mesally, with sculpture principally triploid heterodyname; all the intervals catenulate, with primaries often more costate, sometimes quaternaries traceable as a series of granules; lateral margins with both preapical emarginations and humeral serrations entirely absent. Hind wings small subtriangularly atrophied.

Hind coxae generally bisetose; postero-proximal setae absent. Hind trochanters smooth, without any setiferous pore. Abdomen with transverse sulci prominent.

Male aedeagus rather straight at base, broad and arcuate distally. Endophallus with praeputial pad strikingly sclerotized on distal ventral wall; ligula greatly degenerated into a small patch of granules; copulatory piece not developed.

Female genitalia with bursa copulatrix well developed. Vaginal apophysis with inner plate very small; outer plate elongate oval.

## 28. *Scambocarabus kruberi* Fischer, 1822

큰두꺼비딱정벌레 (시베리아딱정벌레)

*Carabus Kruberi* Fischer, 1822, Ent. Imp. Russ. 1:28, pl. 4(9).

**Type-locality:** U.S.S.R. (E. Siberia: Irkutsk).

**Description:** General coloration polished black, without any prominent metallic luster on dorsum.

Head moderately stout posteriorly; frontal impressions deep, reaching middle of eyes, punctulate and irregularly rugose posteriorly; vertex rather flat, evenly continuous posteriorly, not transversely grooved, with punctures deep prominent and moderately scattered. Mandibles with dorsal surface smooth, scattered with sparse micropunctures. Maxillary palpi comparatively short, with apical segments strikingly extending subtriangularly distally especially in male; penultimate segments very small, markedly shorter than apical segments. Labium with mentum generally lacking setae; median tooth short, sharply pointed; labial palpi short, with apical segments strikingly triangularly extending distally, slightly shorter than penultimate segments (ratio, 1: 1.2). Submentum thickened transversely, usually with a pair of gular setae.

Antennae apparently short, just reaching or very slightly exceeding shoulders of elytra; hairy segments simple in both sexes, without ventral hairless areas.

Pronotum markedly wider than long (ratio, 1: 0.65-0.74), with 2 lateral setae on each side; anterior margin gently emarginate mesally, broad linearly defined; lateral margins narrow, sharply defined, evenly contracted anteriorly, very obscurely sinuate before hind angles or evenly contracted posteriorly; hind angles broad and very slightly extending posteriorly or not protrudent; punctures deep prominent, rather sparse mesally, usually more dense posteriorly; basal foveae very small and shallow.

Elytra ovoid to slightly elongate oval, strongly convex mesally, broadest near middle, with sculpture principally triploid heterodyname, but quaternaries traceable between all the intervals thus seemingly forming heptaploid sculpture; primaries nearly samely costate as or very slightly higher than secondaries, segmented by a series of 9 to 13 small but deep foveae; secondaries usually more frequently segmented than primaries; tertiaries usually smaller than primaries or secondaries, interrupted frequently; quaternaries rather irregularly granulate. Hind wings small subtriangularly atrophied. Chaetotaxy of hind coxae generally bisetose; postero-proximal setae absent.

Male aedeagus rather straight at base, bent at distal one-fifth, with end piece small and short. Ostium asymmetrically lobate at base; the left lobe larger and bilobate; the right one smaller and

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papilla-like, not bilobate. Endophallus with praeputial pad strikingly sclerotized and horn-likely protruded; ligula greatly degenerated into a small patch of granules; copulatory piece absent.

Female genitalia with vaginal wall conspicuously coriaceous and forming somewhat transverse grooves at distal ventral portion. Vaginal apophysis with inner plate very small, ovoid; outer plate much larger, elongate oval.

**Length:** Male 19-22mm, female 22-25mm.

**Distribution:** Korea, China (Manchuria), U.S.S.R. (Maritime Territory, E. Siberia), Mongolia.

**Key to subspecies of *Scambocarabus kruberi***

1. Body generally broad oval to oval. Pronotum more wider. Elytra broad, with lateral margins roundly extending; secondary intervals often more shortly catenulate . . . . . *Scambocarabus kruberi kruberi*  
— Body generally ovoid to elongate oval. Pronotum less wider. Elytra elongate oval, with lateral margins less extending laterally; secondary intervals often shortly catenulate . . . . . *Scambocarabus kruberi hallasanensis* subsp. nov.

**28-1. *Scambocarabus kruberi kruberi* (Fischer, 1822)** 큰두꺼비딱정벌레

*Carabus Kruberi* Fischer, 1822, Ent. Imp. Russ. 1:28, pl.4 (9).

*Carabus (Eurycarabus Sect. Scambocarabus) kruberi*: Breuning, 1933, Best.-Tab. eur. Col 7-889 ①.

*Carabus kruberi*: Cho, 1957, Hum. & Sci., Nat. Sci. Kor. Univ. 2:181 (Korea).

*Carabus kruberi*: Cho, 1963b, Journ. Nat. Acad. Sci. Rep. Kor. Nat. Sci. Ser. 4:86 ②-④.

*Carabus kruberi*: Zool. Soc. Kor., 1968, Nom. An. Kor. 2:98 (Korea).

*Carabus kruberi*: Cho, 1969, Ill. Encycl. Faun. & Flor. Kor. 10:130, pl.4(16) (N. Korea).

*Scambocarabus kruberi kruberi*: Lee, 1977, Kor. Journ. Ent. 7(2):39. ⑤.

**Type-locality:** U.S.S.R. (E. Siberia: Irkutsk).

**Description:** General body shape oval to broad oval, with dorsum polished black lacking any metallic luster.

Pronotum usually strikingly broad, about 1 1/3 to 2 times as wide as long, with punctures somewhat sparsely scattered mesally.

Elytra broad oval, with lateral margins more or less roundly extending; secondary intervals very frequently interrupted.

**Length:** Male 19-22m, female 22-25mm.

**Locality:** HB : Ch'ongjin (=Cheong-Jin ⑤, Chungzin ②, Seishin ①), Mt. Kwanmobong (=Kwanmo-san ④), Puryong (=Punyung ③).

**Distribution:** Korea (Northeastern part), China (Manchuria), U.S.S.R. (Maritime Territory, E. Siberia), Mongolia.

**28-2. *Scambocarabus kruberi hallasanensis* Kwon et Lee, subsp. nov.** 한라산두꺼비 딱정벌레

**Description:** Closely allied to the nominate subspecies, but separated well from it by the followings:

General body shape more elongate. Head with frontal impressions slightly less rugose. Pro-

notum less wider, with punctures slightly weaker.

Elytra more elongate, with lateral margins less extending laterally, or somewhat partially subparallel-sided. Secondary intervals more often shortly interrupted.

**Length:** Male 21-22mm.

**Type-examined:** Holotype male, Mt. Hallasan, JJ, S. Korea, 8, VI, 1972, coll. S.M. Lee; para-type: 1 male, same data as holotype.

**Remark:** This subspecies may be separable apparently from the nominate continental one by the above differences, and the present locality becomes the southern limit of the distributional range of this species.

Genus 11. *Tomocarabus* Reitter, 1896

두꺼비딱정벌레 속

*Tomocarabus* Reitter, 1896, Best.-Tab. eur. Col. 34:135.

Type-species: *Carabus convexus* Fabricius, 1775

Type-locality: Europe (Germany).

**Diagnosis:** Body generally small sized, rather convex oval to elongate oval. Coloring dark rufous to polished black, or often with metallic luster on dorsum.

Head generally moderately stout; frontal impressions deep, reaching anterior margins of eyes or slightly exceeding, rather markedly rugose posteriorly. Mandibles generally stout and broad, with inner margins more or less straight except apices which are abruptly bent inwards and pointed; dorsal surface smooth, sometimes obscurely partially subrugulose or micropunctulate. Maxillary palpi with apical segments strikingly extending distally especially in male; penultimate segments small, apparently shorter than apical segments. Labium generally without setae on mentum, with a median tooth short subtriangular; labial palpi with apical segments strikingly triangularly extending distally, and with penultimate segments bisetose; submentum less thickened, or rather flat, with a pair or more of gular setae present. Eyes prominent, protudent well laterally.

Antennae short to slender, with 2nd segments usually exceeding half as long as 3rd segments, often both slightly compressed basally; hairy segments simple in both sexes, or with ventral hairless areas in male.

Pronotum wider than long, bisetose to multisetose laterally, with hind angles markedly well developed or rarely short; lateral margins narrow, usually sharply defined, gently evenly sinuate before hind angles; punctures prominent, often rugulose; basal foveae small.

Elytra ovoid to slightly elongate oval, with sculpture triploid to pentaploid, homodyname or heterodyname; primary intervals often catenulate, other intervals frequently segmented or granulate; preapical emarginations absent; humeral serrations at lateral margins entirely absent. Hind wings small subtriangularly atrophied.

Hind coxae usually bisetose; postero-proximal setae absent. Hind trochanters smooth, without any setiferous pore. Abdomen with transverse sulci prominent to evanescent.

Male aedeagus rather roundly arcuate, with ostium usually lobate at its basal area. Endophallus long, with a ligula greatly degenerated into a small patch of granules; copulatory piece not developed.

Female genitalia with bursa copulatrix well developed. Vaginal apophysis with inner plate small; outer plate elongate oval.

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29. *Tomocarabus fraterculus* (Reitter, 1895) 두꺼비딱정벌레 (북한딱정벌레)

*Carabus (Eurycarabus) fraterculus* Reitter, 1895, Wien. Ent. Zeit. 14(4):107.

**Type-locality:** Korea (Northeastern part ?).

**Description:** General coloration dark rufous to polished black, without any prominent metallic luster on dorsum.

Head moderately stout; frontal impressions deep, seldom reaching middle of eyes, irregularly rugose posteriorly; vertex rather flat, with punctures deep rugose, slightly concave transversely to posterior margins of eyes. Mandibles with dorsal surface sometimes obscurely partially subrugose, or often scattered with sparse micropunctures. Maxillary palpi with apical segments strikingly extending subtriangularly distally, especially in male; penultimate segments very small, markedly shorter than apical segments. Labium with median tooth slightly shorter than its lateral lobes, sharply pointed; labial palpi in male with apical segments strikingly triangularly extending distally, about as long as or slightly shorter than penultimate segments, in female gently subtriangularly extending distally and slightly less than penultimate segments. Submentum slightly convex mesally, bearing with a pair of gular setae.

Antennae short to long, often reaching before middle of elytra in male; hairy segments simple in both sexes, without ventral hairless areas.

Pronotum wider than long (ratio, 1: 0.75), with 4 to 6 lateral setae on each side; anterior margin gently emarginated mesally, broad linearly defined; lateral margins narrow, sharply defined and frequently notched, roundly contracted anteriorly, gentle evenly sinuate before hind angles; hind angles broad subtriangularly protrudent posteriorly; punctures deep prominent; basal foveae small and deep.

Elytra ovoid, broadest middle to apical third, with sculpture principally triploid heterodyname, or pentaploid with quaternaries traceable between primary and tertiary intervals; primaries broadest, catenulate by a series of large and deep foveae; secondaries and tertiaries often samely raised and interrupted, or granulate; quaternaries very weak, if present, forming an irregular row of granules. Hind wings small subtriangularly atrophied.

Chaetotaxy of hind coxae generally bisetose; postero-proximal setae absent.

Male aedeagus gentle roundly arcuate mesally, sharply carinate longitudinally on ventral side, with end piece small, markedly flat, deep roundly terminated. Ostium with 2 lobes at its basal area. Endophallus long, with a ligula greatly degenerated into a small ovoid patch of granules; copulatory piece absent; praeputial pad markedly sclerotized.

Female genitalia with bursa copulatrix strikingly large, well developed. Vaginal apophysis with inner plate small ovoid; outer plate much larger, elongate oval. Epivaginal sclerite very short and markedly wide.

**Length:** Male 16-19mm, female 17-21mm.

**Distribution:** Korea, U.S.S.R. (Maritime Territory).

**Remark:** Although Reitter (1895) did not indicated the exact type-locality (he described based on the material from coll. Staudinger et Bang-Haas), it would be apparently belonging to the northeastern area of Korean Peninsula, judging from his description and considering the 2 collectors whom we often familiar with their many collecting records on coleopterans in this area.

**Key to subspecies of *Tomocarabus fraterculus***

1. Abdomen with transverse sulci evanescent, or at most weakly traceable . . . . . 2.  
— Abdomen with transverse sulci sharply carved, often not interrupted mesally . . . . . 3.

2. Pronotum usually with 4 to 5 lateral setae on each side, strong deep rugosely punctulate. Elytra very strongly sculptured, with foveae on primary intervals strikingly large and deep  
 ..... *Tomocarabus fraterculus fraterculus*  
 —. Pronotum usually with 5 to 6 lateral setae on each side, less deep rugosely punctulate. Elytra less strongly sculptured, with foveae on primary intervals often smaller and shallow  
 ..... *Tomocarabus fraterculus affinis* subsp. nov.
3. Pronotum usually with 4 lateral setae on each side .....  
 ..... *Tomocarabus fraterculus yeongsiki* subsp. nov.  
 —. Pronotum usually with 5 to 6 lateral setae on each side .....  
 ..... *Tomocarabus fraterculus assimilis* subsp. nov.

29-1. *Tomocarabus fraterculus fraterculus* (Reitter, 1895)      두꺼비딱정벌레 (민박정벌레)

- Carabus (Eurycarabus) fraterculus* Reitter, 1895, Wien, Ent. Zeit. 14(4):107 (Korea).  
*Carabus (Tomocarabus) fraterculus*: Csiki, 1927, Col. Cat. 91:179 (Korea).  
*Carabus (Eurycarabus) Sect. Tomocarabus) fraterculus*: Breuning, 1933, Best.-Tab. eur. Col. 107:881-882 <sup>①</sup>.  
*Leptocarabus opaculus* (nec Putzeys): Cho, 1934, Journ. Chos. Nat. Hist. Soc. 17:84 <sup>②</sup>.  
*Leptocarabus opaculus* (nec Putzeys): Mochizuki, 1936, Kontyû. 10(4):212 <sup>③</sup>.  
*Leptocarabus opaculus* (nec Putzeys): Mochizuki et Tsunekawa, 1937, Journ. Chos. Nat. Hist. Soc. 22:76 <sup>④</sup>.  
*Leptocarabus opaculus* (nec Putzeys): Mochizuki et Masui, 1939, Sci. Rep. Keit. 4:53 <sup>⑤</sup>.  
*Carabus (Tomocarabus) fraterculus*: Yano, 1941, Nipp. Koch. 4(1):18 (Corea).  
*Leptocarabus opaculus* (nec Putzeys): Cho, 1947, Bull. Zool. Sect. Nat. Sci. Mus. Seoul. 2(3):70 <sup>⑥</sup>.  
*Carabus opaculus* (partim nec Putzeys): Yokoyama, 1950, Icon. Ins. Jap. ed. sec. ref.: 971, f. 2,765 (Korea).  
*Carabus opaculus* (nec Putzeys) + *C. fraterculus*: Cho, 1957, Hum. & Sci., Nat. Sci. Kor. Univ. 2:179, 181 (Korea).  
*Carabus opaculus* (nec Putzeys) + *C. fraterculus*: Cho, 1963b, Journ. Nat. Acad. Sci. Rep. Kor. Nat. Sci. Ser. 4:81 <sup>⑦-⑨</sup>.  
*Carabus opaculus* (nec Putzeys) + *C. fraterculus*: Zool. Soc. Kor., 1968, Nom. An. Kor. 2:97-98 (Korea).  
*Carabus fraterculus*: Cho, 1969, Ill. Encycl. Faun. & Flor. Kor. 10:129, pl. 4 (15) (N. Korea).  
*Carabus (Tomocarabus) fraterculus*: Lafer, 1973, Ent. Rev. 52(4):541 <sup>⑩</sup>.

**Type-locality:** Korea (Northeastern part ?).

**Description:** General coloration dark rufous to polished black. Antennae often short, not exceeding basal one-third of elytra.

Pronotum widest before middle, usually with 4 to 5 lateral setae on each side; punctures strikingly deep rugose.

Elytra very strongly sculptured, with foveae on primary intervals markedly deep and large; secondaries often frequently interrupted by a series of small foveae; quaternaries very weakly granulate.

Abdomen with transverse sulci usually evanescent, or at most very weakly traceable. Male aedeagus with end piece comparatively broad, about as wide as long.

**Length:** Male 18-19mm, female 19-21mm.

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Locality: GW : Mt. Kūmgangsan<sup>⑤</sup> (=Mt. Diamond<sup>⑥</sup>, Mt. Kongo<sup>③</sup>, Kumkang-san<sup>⑦</sup>, Pirobong<sup>④</sup>).  
HB : Chuūl (=Chuul<sup>⑧</sup>), Mt. Kwanmobong<sup>②</sup>, Onp'o (=Ompo<sup>①</sup>).  
HN : Unsuryōng (=Unsu-ryung<sup>⑧</sup>).

Distribution: Korea (Northeastern part), U.S.S.R. (Maritime Territory).

29-2. *Tomocarabus fraterculus affinis* Kwon et Lee, subsp. nov. 중두꺼비딱정벌레

*Tomocarabus fraterculus fraterculus* (partim): Lee, 1977, Kor. Journ. Ent. 7(2):39<sup>①-③</sup>.

**Description:** General coloration usually polished black on dorsum. Antennae slender, often reaching before middle of elytra in male.

Pronotum usually with 5 to 6 lateral setae on each side, deep rugosely punctulate. Elytra less strongly sculptured, with foveae on primary intervals often smaller and shallower than those of the nominate subspecies; secondaries and tertiaries nearly samely raised and frequently interrupted.

Abdomen with transverse sulci usually at most weakly traceable. Male aedeagus with end piece usually longer than wide.

**Length:** Male 16-18.5mm, female 17-20mm.

**Type-examined:** Holotype male, Mt. Odaesan, GW, C. Korea, 17, IX, 1982, coll. Y. J. Kwon; paratypes: 1 male, 8, VIII, 1976, the same locality, coll. S.M. Lee; 1 female, same data as holotype; 3 males, 1 female, 18, IX, 1982, the same locality, coll. Y.J. Kwon; 1 female, 3, VIII, 1983, the same locality, coll. Y.J. Kwon; Mt. Sōlaksan, GW, C. Korea, 2 females, 9, VI, 1971, coll. S.M. Lee; 1 female, 21, VI, 1971; 1 female, 27, VII, 1971; 1 male, 1 female, 29, VII, 1971; 2 females, 30, VII, 1971; 1 female, 31, VII, 1971; 1 female, 27, VIII, 1974, all the same locality and collector; Mt. Myōngjisan, GG, C. Korea, 1 male, 1 female, 6, VI, 1976, coll. S.M. Lee; 2 males, 2 females, 27, V, 1978, the same locality and collector.

**Locality:** GG : Mt. Myōngjisan (=Mt. Myeong-Ji<sup>③</sup>).

GW : Mt. Odaesan (=Mt. O-Dae<sup>②</sup>), Mt. Sōlaksan (=Mt. Seol-Ag<sup>①</sup>).

**Remark:** The present new subspecies is easily differentiated from the nominate one by the chaetotaxy of prothorax and ventral sulci.

29-3. *Tomocarabus fraterculus yeongsiki* Kwon et Lee, subsp. nov. 영식두꺼비딱정벌레

**Description:** General coloration usually polished black on dorsum. Antennae slender, often reaching before middle of elytra in male.

Pronotum usually with 4 lateral setae on each side, deep rugosely punctulate. Elytra less strongly sculptured, with foveae on primary intervals often smaller and shallower than those of nominate subspecies; secondaries and tertiaries nearly samely raised and frequently interrupted.

Abdomen with transverse sulci sharply carved, not interrupted mesally. Male aedeagus with end piece usually longer than wide.

**Length:** Male 17-18.5mm, female 19-21mm.

**Type-examined:** Holotype male, Mt. Chirisan, GN, S. Korea, 6, VI, 1983, coll. Y.J. Kwon; paratypes: 10 males, 13 females, same data as holotype; 1 male, 13, VII, 1981, the same locality and collector.

**Remark:** This new subspecies is separated from other subspecies in having 4 lateral setae on each side of pronotum and prominently carved ventral sulci.

29-4. *Tomocarabus fraterculus assimilis* Kwon et lee, subsp. nov. 남두꺼비딱정벌레*Tomocarabus fraterculus fraterculus* (partim): Lee, 1977, Kor. Journ. Etn. 7(2):39<sup>①</sup>.**Description:** General coloration usually polished black on dorsum. Antennae slender, often reaching before middle of elytra in male.

Pronotum usually with 5 to 6 lateral setae on either side, deep rugosely punctulate. Elytra less strongly sculptured, with foveae on primary intervals often smaller and shallower than those of nominate subspecies; secondaries and tertiaries nearly samely raised and frequently interrupted; quaternaries very weak, but rather irregularly present.

Abdomen with transverse sulci sharply carved, not interrupted mesally. Male aedeagus with end piece usually longer than wide.

**Length:** Male 17-19mm, female 19-21mm.**Type-examined:** Holotype male, Mt. P'algongsan, GB, S. Korea, 24, V, 1983, coll. Y.J. Kwon; paratypes: 20 males, 25 females, same data as holotype; 1 female, 14, V, 1983; 1 female, 18, V, 1983, all the same locality and collector; Mt. T'aebaeksan, GW, C. Korea, 1 male, 18, VI, 1974, coll. S.M. Lee; 2 males, 1 female, 27, VI, 1976, 2 females, 19, VI, 1983, all the same locality and collector; Mt. Sobaeksan, GB, S. Korea, 1 male, 6, VI, 1981, coll. S.M. Lee.**Locality:** GW : Mt. T'aebaeksan (=Mt. Tae-Baeg<sup>①</sup>).**Remark:** This new subspecies may be separable from other subspecies in having 5 to 6 lateral setae on each side of pronotum and prominently carved ventral sulci.Genus 12. *Megodontus* Solier, 1848 유니나딱정벌레 속*Megodontus* Solier, 1848, Stud. Ent. 1:58.Type-species: *Carabus caelatus* Fabricius, 1801

Type-locality: Europe.

**Diagnosis:** Body generally small to medium sized, elongate oval to elongate, usually strongly convex dorsally. Coloring black, often with violaceous, greenish, reddish coppery or various metallic luster on dorsum.

Head comparatively small to moderate; frontal impressions deep to shallow, not exceeding middle of eyes, fine or sparsely punctulate, or rugose; vertex more or less flat, usually not or very obscurely transversely grooved posteriorly, with punctures fine or deep prominent. Mandibles generally long and narrow, gradually arcuately tapering to apices, with inner margins gently round; dorsal surface usually smooth, often with sparse fine punctures. Maxillary palpi short to moderate, with apical segments about as long as or slightly exceeding penultimate segments, strikingly subtriangularly extending distally in male. Labium generally without setae on mentum; median tooth slightly obtuse subtriangular, often exceeding its lateral lobes, sometimes slightly raised subobliquely; labial palpi short to moderate, with apical segments strikingly subtriangularly extending distally, and with penultimate segments multisetose. Submentum usually flat, often lacking gular setae. Eyes usually prominent, protruding laterally.

Antennae very short to moderate, with 2nd segments generally exceeding half as long as 3rd segments; 2nd to 3rd or 4th segments usually slightly compressed basally; hairy segments simple, without ventral hairless areas in both sexes.

Pronotum wider than long, bisetose to multisetose laterally; lateral margins broad and gradually raised, or narrowly defined, very weakly to apparently sinuate before hind angles; hind angles broad obtuse or subtriangularly protruding posteriorly; punctures fine to deep sparse, sometimes rugulose; basal foveae deep to shallow.

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Elytra ovoid to elongate, usually markedly to very strongly convex mesally, with sculpture almost entirely homogeneous to triploid heterodyname; lateral margins moderate to narrow, with preapical emarginations and humeral serrations entirely absent. Hind wings strikingly atrophied into small lobes.

Fore tarsi dilated in male, but 4th segments usually small. Chaetotaxy of hind coxae usually bisetose, with anterior setae always absent. Hind trochanters smooth, without any setiferous pore. Abdomen with transverse sulci generally absent or vestigial.

Male aedeagus moderately slender, roundly curved distally; end piece short to long, broadly rounded or tapering, sometimes extending apically; ostium simple or lobate at its basal area. Endophallus long, with a ligula greatly degenerated into a small patch of pigmented granules; copulatory piece entirely absent; praeputial pad moderately deep.

Female genitalia with bursa copulatrix well developed. Vaginal apophysis with inner plate usually roundly broad, somewhat dish or dipper-shaped; vertical plate usually high; outer plate very large and broad.

**Remark:** Previously this genus was treated as a subgenus of *Procrustes* Bonelli, 1809 in wide sense, but it has a sufficiently distinct characters of its own, although it is related to the latter in some external feature, consisting of several subgenera including *Ainocarabus* Mandl, 1973 stat. nov.

Subgenus *Nabicarabus* Kwon et Lee, subgen. nov. 나비유니나막정벌레 아속

**Type-species:** *Carabus vietinghoffi* Adams, 1812

**Type-locality:** U.S.S.R. (E. Siberia).

**Diagnosis:** Body generally medium sized, elongate oval and strongly convex. Coloring black, with strong greenish, violaceous, reddish coppery or metallic luster on dorsum.

Head slightly narrowed, comparatively small to moderate; frontal impressions moderately deep, often reaching middle of eyes; vertex more or less flat posteriorly, very weakly or obscurely transversely grooved posteriorly, but slightly convex anteriorly, with punctures deep prominent and rather sparse. Mandibles generally long and narrow, gradually arcuately tapering to apices, with inner margins gently round; dorsal surface usually smooth, often with sparse fine micro-punctures. Maxillary palpi comparatively short, with apical segments about as long as or slightly longer than penultimate segments, strikingly subtriangularly extending distally in male. Labium generally without setae on mentum; median tooth slightly obtuse subtriangular, often slightly exceeding its lateral lobes, somewhat raised subobliquely; labial palpi short, with apical segments strikingly subtriangularly extending distally in male, and with penultimate segments multisetose. Submentum usually flat, lacking gular setae or rarely with a pair present. Eyes prominent, protruding well laterally.

Antennae short, a little exceeding shoulders or elytra, with 2nd segments apparently exceeding half as long as 3rd segments, both usually slightly compressed basally; hairy segments simple, without ventral hairless areas in both sexes.

Pronotum wider than long, somewhat subquadrate, multisetose laterally, with punctures deep sparse; lateral margins very narrow, sharply defined, weakly sinuate before hind angles; hind angles obtuse subtriangularly protrudent posteriorly; basal foveae very small, less deep.

Elytra elongate oval, very strongly convex mesally, with sculpture triploid homodyname or forming 14 to 15 almost regularly spaced and raised intervals on each elytron; lateral margins narrow to moderate, with preapical emarginations and humeral serrations always absent. Hind wings strikingly atrophied into small lobes.

Fore tarsi dilated in male, but 4th segments usually small. Chaetotaxy of hind coxae usually bisetose, with anterior setae always absent. Hind trochanters smooth, without any setiferous pore. Abdomen with transverse sulci generally absent.

Male aedeagus moderately slender, roundly curved distally; end piece usually short and broad, roundly terminated. Endophallus long, with a ligula greatly degenerated into a small patch of pigmented granules; copulatory piece entirely absent.

Female genitalia with bursa copulatrix well developed. Vaginal apophysis with inner plate somewhat round dish-shaped; vertical plate high; outer plate very large and broad, more or less emarginate anteriorly and posteriorly.

**Remark:** The present new subgenus is separated from the related 2 subgenera, *Megodontus* Solier, 1848 s. str. and *Ainocarabus* Mandl, 1973, by the structure of female inner plate of vaginal apophysis which is simple round dish-shaped, as seen from that of the genus *Procrustes* Bonelli, 1809 s. str. Whereas it is generally abruptly deep concave, obtusely produced anteriorly, and thus somewhat dipper-shaped in the preceding 2 subgenera.

The relationships between these subgenera have not yet been explored satisfactorily upon sufficient examination of the species groups belonging to this genus, but it seems possible that the present new subgenus is more closely related to the genus *Procrustes* s. str. than the others.

30. *Megodontus (Nabicarabus) vietinghoffi* (Adams, 1812) 유니아막정벌레 (금데보라막정벌레)

*Carabus Vietinghoffi* Adams, 1812, Mem. Soc. Nat. Mosc. 3:170, pl. 12(3).

**Type-locality:** U.S.S.R. (E. Siberia).

The nominate subspecies is represented widely in E. Siberia, and is separated from other subspecies by the more ovoid body and the elytral sculpture in having more frequently interrupted primary intervals.

Previously the following new subspecies was recorded in Korea as subsp. *moltrechti* Semenov, 1907 by the one of the authors, Lee (1977).

30-1. *Megodontus (Nabicarabus) vietinghoffi borealis* Kwon et Lee, subsp. nov. 나비유니아막정벌레

*Carabus monilis* var. *excellens* (nec Dejean): Mochizuki, 1935, Rinsei, 2(4):33<sup>①</sup>.

*Carabus hummeli* (nec Fischer) + *C. vietinghoffi*: Cho, 1969, Ill. Encycl. Faun. & Flor. Kor. 10:125-126, pl. 3 (6, 7) (N. Korea).

*Procrustes vietinghoffi caesareus* (nec Semenow): Tamanuki, 1970, Beaut. Beetl. World: 25-28 (Korea).

*Megodontus vietinghoffi moltrechti* (nec Semenov): Lee, 1977, Kor. Journ. Ent. 7(2):39<sup>②</sup>.

**Description:** General coloration black, with strong metallic greenish luster on dorsum; lateral margins of pronotum and elytra with reddish coppery luster; elevated parts of elytral intervals black.

Head comparatively small to moderate, slightly stout posteriorly; frontal impressions narrowly deep anteriorly, rather widely shallow and rugulose posteriorly, often reaching before middle of eyes. Labium with anterior margin gently emarginate mesally, deep roundly protrudent antero-laterally. Vertex more or less flat, very slightly convex between frontal impressions, somewhat obscure transversely concave to posterior margins of eyes, with punctures deep prominent and sparse. Mandibles with dorsal surface smooth, with very fine sparse micropunctures. Maxillary

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palpi comparatively short, with apical segments strikingly subtriangularly extending distally in male, about as long as or slightly exceeding penultimate segments. Labium with mentum generally lacking setae; median tooth slightly obtuse subtriangular, a little exceeding its lateral lobes, somewhat raised subobliquely; labial palpi very short, with apical segments strongly subtriangularly dilated distally in male, slightly shorter than penultimate segments (ratio, 1: 1.1). Submentum usually flat, lacking gular seate or rarely with a pair present.

Antennae short, slightly exceeding shoulders of elytra; hairy segments simple in both sexes, without ventral hairless areas.

Pronotum wider than long (ratio, 1: 0.76-0.78), somewhat subquadrate, broadest before middle, more or less convex, with 3 to 4 lateral setae on each side; anterior margin roundly emarginate, linearly defined; lateral margins very narrow and sharply defined, somewhat broad roundly contracted anteriorly, weakly sinuate before hind angles; hind angles obtuse subtriangularly protruding posteriorly, obliquely bent downwards; basal foveae very small, often pit-like concave; punctures deep prominent and sparse, somewhat subrugose posteriorly.

Elytra elongate oval, very strongly convex mesally, broadest middle to behind middle, strongly polished, with sculpture triploid homodyname, and forming nearly regularly spaced and raised 15 intervals on each elytron which are often interrupted, and frequently bridged transversely one another; shoulders moderately narrow, roundly continuous to lateral margins. Hind wings strikingly atrophied, very small lobe-like and somewhat thickened, deep roundly terminated.

Chaetotaxy of hind coxae generally bisetose, with anterior setae generally absent, but postero-proximal setae always present. Hind trochanters smooth, without any setiferous pore on venter.

Male aedeagus with shaft gentle roundly arcuate distally; end piece usually short and broad, even roundly terminated. Endophallus long, with a ligula greatly degenerated into a small patch of pigmented granules; copulatory piece entirely absent.

Female genitalia with bursa copulatrix very large; ventral vaginal wall around the inner plate of apophysis conspicuously coriaceous, forming somewhat subquadrate wrinkles outwards and concentric wrinkles innerwards. Vaginal apophysis with inner plate broad round oval, somewhat dish-shaped; vertical plate very high; outer plate very large and broad, rather emarginated anteriorly and postreiorly. Epivaginal plate small.

**Length:** Male 23.5mm, female 23-24mm.

**Type-examined:** Holotype female, Mt. Kwanmobong, HB, N. Korea, ?, VII, 1934, coll. S.M. Lee; paratypes: 1 female, 4, VIII, 1933, the same locality as holotype; 1 male, Unsuryŏng, HN, N. Korea, 26, VII, 1935, coll. S.M. Lee.

**Locality:** HB : Mt. Kwanmobong (=Mt. Gwan-Mo-Bong<sup>②</sup>).

HN : Pujŏn'gowŏn<sup>①</sup>.

**Remark:** The present new subspecies resembles subsp. *caesareus* (Semenov, 1906), but the latter has dorsum more darker, with pronotum more widely extending, and shoulders of elytra generally wider.

Genus 13. *Damaster* Kollar, 1836 곤룡마정벌레 속

*Damaster* Kollar, 1836, Ann. Wien. Mus. 1:333.

Type-species: *Damaster blaptoides* Kollar, 1836

Type-locality: Japan.

**Diagnosis:** Body generally small to very large sized, ovoid to strikingly elongate, variable in shape. Coloring black, often with various metallic luster on dorsum.

Head variable, sometimes both stenocephalism and macrocephalism present; frontal impressions moderately deep, not exceeding middle of eyes; vertex more or less flat or slightly convex, not transversely grooved but evenly continuous posteriorly, with punctures deep sparse or fine. Mandibles generally long and narrow, gradually arcuately tapering to apices, with inner margins gently round; dorsal surface usually smooth, often with sparse fine punctures. Maxillary palpi with apical segments strikingly subtriangularly extending distally in male, somewhat ax-like in shape. Labium generally without setae on mentum; median tooth very weakly subtriangular or rarely strongly developed into a spine-like process; labial palpi moderately long, with apical segments strikingly subtriangularly extending distally and ax-like in male, with penultimate segments bisetose or sometimes multisetose. Submentum usually less convex, with or without gular setae. Eyes usually less prominent and somewhat small.

Antennae moderate to slender, but not exceeding middle of elytra, with 2nd segments generally exceeding half as long as 3rd segments; 2nd to 3rd or 4th segments usually slightly compressed basally; hairy segments simple, without ventral hairless areas in both sexes.

Pronotum variable, wide to narrow, bisetose on each side, sometimes with posterior marginal setae absent, or entirely without any setae; lateral margins narrowly defined, or broad and gradually raised, often roundly extending near middle to before middle, very weakly or strongly sinuate before hind angles; hind angles obtuse, sometimes broadly or acutely protrudent; basal foveae evanescent to deeply impressed.

Elytra ovoid to elongate, with or without mucrones apically; sculpture variable, often triploid heterodyname, or simply homodyname; lateral margins broad to narrow, with preapical emarginations and humeral serrations entirely absent. Hind wings strikingly atrophied into small lobes.

Basal 3 fore tarsi often dilated in male, or sometimes simple in both sexes. Chaetotaxy of hind coxae trisetose or bisetose, with posterior setae always present. Hind trochanters smooth, without any setiferous pore ventrally. Abdomen with transverse sulci prominent or entirely absent.

Male aedeagus often broad, gently arcuate mesally, with end piece roundly terminated; ostium lobate at its basal area. Endophallus short to long, with a ligula greatly degenerated into a small patch of pigmented granules; copulatory piece entirely absent; praeputial pad moderately deep.

Female genitalia with bursa copulatrix large. Vaginal apophysis with inner plate very narrow to small oval; vertical plate moderately high; outer plate broad and large.

**Remark:** The nominate subgenus, *Damaster* s. str. is indeed endemic to Japanese Archipelago to Taiwan and several previous records of this group in the latter area before Chu's (1967) discovery on *Damaster blaptoides hanae* Chu, 1967 were proved to be an intended error.

The records in Korean Peninsula were also proved to be an intended error as already rectified by the one of the authors, Lee (1977).

#### Key to subgenera of *Damaster*

1. Abdomen with transverse sulci prominent, at most partially obscure mesally . . . *Coptolabrus*  
 —. Abdomen with transverse sulci absent or obscurely reduced . . . . . 2.
2. Pronotum usually monosetose on each side, with posterior setae absent. Chaetotaxy of hind coxae trisetose, having anterior, posterior, and postero-proximal ones. Male aedeagus more or less elongate cylindrical, with ostium lobe bilobate . . . . . *Koreacoptolabrus* susp. nov.  
 —. Pronotum usually bisetose on each side, with posterior marginal setae present. Chaetotaxy of hind coxae bisetose, having anterior and posterior setae lacking postero-proximal

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one, or having postero-proximal and posterior setae lacking anterior one. Male aedeagus more or less broad laterally, with ostium lobe simple . . . . . *Acoptolabrus*

Subgenus *Acoptolabrus* Morawitz, 1886 꼬마조롱박딱정벌레 아속

*Acoptolabrus* Morawitz, 1886, Mém. Acad. Sci. St. Pet. Ser. 7. 34(9):17.

Type-species: *Coptolabrus schrencki* Menétries, 1860

Type-locality: U.S.S.R. (Maritime Territory).

**Diagnosis:** Body generally small to medium sized, ovoid to elongate oval and strongly convex. Coloring black, with various rich metallic luster on dorsum.

Head stout cylindrical, but macrocephalism not known; frontal impressions prominent and moderately deep, not exceeding middle of eyes; vertex more or less slightly convex between frontal impressions, not transversely grooved but evenly continuous posteriorly, with punctures rather sparse. Mandibles generally long and narrow, gradually tapering to apices, with inner margins gently round; dorsal surface usually smooth, often with sparse fine punctures. Maxillary palpi with apical segments strikingly subtriangularly extending distally in male, somewhat ax-like in shape. Labium generally without setae on mentum; median tooth very weakly or broad subtriangular, apparently shorter than its lateral lobes; labial palpi with apical segments strikingly subtriangularly extending distally and ax-like in male, with penultimate segments bisetose. Submentum usually less convex, generally lacking gular setae. Eyes usually less prominent and comparatively small.

Antennae moderate to slender, sometimes reaching before middle of elytra, with 2nd segments generally exceeding half length of 3rd segments; 3rd to 4th segments usually slightly compressed basally; hairy segments simple, without ventral hairless areas in both sexes.

Pronotum wide to somewhat narrow, usually bisetose on each side, with anterior margin well defined; lateral margins very narrowly defined, even roundly contracted anteriorly, usually weakly to gently sinuate before hind angles where sometimes notched; hind angles obtuse, at most shortly produced; basal foveae small, but very deeply impressed.

Elytra ovoid to elongate oval, strongly convex mesally, slope gradual to apex, always without mucrones apically; sculpture variable, fundamentally triploid heterodyname, with primary intervals strongly carinate or interrupted frequently; lateral margins narrow, with preapical emarginations and humeral serrations entirely absent; shoulders narrow and roundly produced. Hind wings strikingly atrophied into small lobes.

Basal 3 fore tarsi dilated in male. Chaetotaxy of hind coxae bisetose, with posterior setae always present. Hind trochanters smooth, without any setiferous pore. Abdomen with transverse sulci entirely absent.

Male aedeagus usually broad and gently arcuate mesally, with end piece very short and broad, deep roundly terminated; ostium usually with a papilla-like lobe at its basal area. Endophallus moderate, with a ligula greatly degenerated into a small patch of pigmented granules; copulatory piece entirely absent.

Female genitalia with bursa copulatrix large. Vaginal apophysis with inner plate very narrow; sometimes prominently extending behind middle; outer plate broad and large.

Key to species of *Acoptolabrus*

1. Head comparatively stout and short. Pronotum apparently wider than long, weakly sinuate before hind angles. Elytra more or less ovoid . . . . . *Damaster (Acoptolabrus) schrencki*

- Head comparatively less stout, more elongate cylindrical. Pronotum relatively smaller, slightly wider than long, apparently sinuate before hind angles. Elytra rather elongate oval . . . . . *Damaster (Acoptolabrus) seonhyeongae* sp. nov.

31. *Damaster (Acoptolabrus) schrencki* (Ménétries, 1860) 꼬마조롱박딱정벌레 (슈렌크딱정벌레)

*Coptolabrus? Schrencki* Ménétries in Motschulsky, 1860, Schrenck's Reis. & Fersch. Am. Land. 2:99, pl. 6 (29).

*Carabus (Coptolabrus) schrencki*: Breuning, 1936, Best.-Tab. eur. Col. 110:1,491-1,493<sup>①</sup>.

*Carabus schrencki*: Cho, 1957, Hum. & Sci., Nat. Sci. Kor. Univ. 2:182(Korea).

*Carabus schrencki*: Cho, 1963b, Journ. Nat. Acad. Sci. Rep. Kor. Nat. Sci. Ser. 4:86<sup>②</sup>.

*Carabus schrencki*: Zool. Soc. Kor., 1968, Nom. An. Kor. 2:98 (Korea).

*Acoptolabrus schrencki*: Tamanuki, 1970, Beaut. Beetl. World: 17:20 (Korea).

*Acoptolabrus schrencki*: Tamanuki, World: 17-20 (Korea). Nat. & Ins. 7(8):4 (North Korea).

*Acoptolabrus schrencki*: Tamanuki, 1972b, Ibid. 7(10):4-5 (Korea).

*Acoptolabrus schrencki schrencki*: Lee, 1977, Kor. Journ. Ent. 7(2):39<sup>③</sup>.

*Damaster (Acoptolabrus) schrencki*: Sakaguti, 1981, Ins. World. 5:30, pl. 8(2, 3) (N. Korea).

Type-locality: U.S.S.R. (Maritime Territory: Amur).

**Description:** General coloration black, with strong metallic luster; fore body reddish coppery; elytra usually bright green or rarely brownish green to reddish coppery, with elevated parts of intervals black. Under surface polished; head and prothorax bearing with reddish coppery luster; other thorax and abdomen somewhat tinted with greenish to reddish purple luster; legs sometimes reddish purple to bluish purple.

Head comparatively stout, slightly elongate cylindrical but shorter than other species; frontal impressions relatively widely deep, usually slightly exceeding anterior margins of eyes. Vertex slightly convex between frontal impressions, not transversely grooved but evenly continuous posteriorly, with punctures deep prominent and sparse, partly rugulose. Mandibles with dorsal surface smooth, with very fine sparse micropunctures. Maxillary palpi moderately long, with apical segments longer than penultimate segments in both sexes, ax-likely strongly dilated distally in male. Labium with mentum generally lacking setae; median tooth flat and broad subtriangular, apparently shorter than its lateral lobes; labial palpi moderate, with apical segments ax-likely strongly dilated in male. Submentum slightly convex, generally lacking gular setae.

Antennae moderately long, reaching one-third of elytra in male; hairy segments simple in both sexes, without ventral hairless areas.

Pronotum wider than long (ratio, 1: 0.8), somewhat subquadrate, strong roundly declined latero-anteriorly, often with 2 lateral setae on each side; anterior margin swollen linearly defined; lateral margins very narrow and sharply defined, broad roundly extended before middle and gently contracted anteriorly, evenly sinuate before hind angles and often notched; hind angles very short subtriangular, declined outero-downwards; basal foveae small, but prominently deep round; punctures deep prominent, more or less transversely rugulose; median line weak, with posterior portion often slightly carinate.

Elytra ovoid, very strongly convex mesally, slope gradual to apex, broadest near middle, with sculpture triploid heterodyname; primary intervals composed of rather regular rows of very broad subrectangular callosities with smooth surface which are mostly fused laterally with somewhat linear tertiaries which continuous longitudinally to each other; secondaries often forming a row of very small callosities between primaries; grounds coarse and roughly sculptured; shoulders

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moderately roundly protrudent. Hind wings strikingly atrophied, very small lobe-like, and somewhat thickened.

Male aedeagus broad and gently arcuate mesally, with end piece very short and broad, deep roundly terminated. Endophallus moderate, with a ligula greatly degenerated into a small patch of pigmented granules; copulatory piece entirely absent.

**Length:** Male 24-27mm, female 27-32mm.

**Locality:** HB : Hoeryŏng (=Hoe-Ryeong<sup>③</sup>, Hoeryung<sup>②</sup>, Hoirjong<sup>①</sup>).

**Distribution:** Korea, China (Manchuria), U.S.S.R. (Maritime Territory).

**32. *Damaster (Acoptolabus) seonhyeongae* Kwon et Lee, sp. nov.**

선형꼬마조롱박딱정벌레

**Description:** General coloration black, with strong metallic luster; head and pronotum somewhat reddish coppery; elytra greenish coppery, with elevated parts of intervals black; under surface polished, somewhat tinted with greenish coppery to purple luster.

Head comparatively less stout, rather elongate symmetrical, a little widened posteriorly; frontal impressions relatively widely deep, slightly exceeding anterior margins of eyes. Vertex roundly convex between frontal impressions or eyes, not transversely grooved but evenly continuous posteriorly, with lateral carinae slightly convergent anteriorly; punctures deep prominent and sparse, somewhat subrugulose. Mandibles with dorsal surface smooth, with very fine sparse micropunctures; left mandible more or less thickened at base of inner side, with retinaculum very narrow and hardly visible from above; right retinaculum with anterior tooth well protrudent and larger than posterior one, conspicuously well visible from above. Maxillary palpi moderately long, with apical segments apparently longer than penultimate segments and gently extending distally in female. Labium with mentum generally lacking setae; median tooth flat and broad, apparently shorter than its lateral lobes; labial palpi moderate, with apical segments subtriangular and slightly shorter than penultimate segments in female. Submentum slightly convex, generally lacking gular setae.

Pronotum slightly wider than long (ratio, 1 : 0.9), bisetose laterally, with posterior marginal setae present; anterior margin well defined and greatly swollen, very obscurely evenly emarginate mesally; lateral margins very narrowly defined, even roundly contracted anteriorly, gently sinuate before hind angles where there are weak notches; hind angles obtuse, shortly produced and bent outero-downwards; basal foveae small, but prominently deep round, posterior area between these rather depressed and strongly rugose; median line weak, with posterior portion slightly carinate.

Elytra elongate oval and strongly convex mesally, slope gradual to apex, broadest near middle, with sculpture triploid heterodynamic; primary intervals composed of a row of large rectangular callosities of irregular length with smooth surface which are mostly fused laterally with somewhat linear tertiaries which continuous longitudinally to each other or often interrupted frequently on apical third; secondaries forming a row of very small callosities between primaries; grounds coarse and roughly sculptured; lateral margins very narrow, with shoulders narrow and rather roundly extending. Hind wings strikingly atrophied, very small lobe-like, and somewhat thickened. Chaetotaxy of hind coxae bisetose, with anterior setae absent.

Female genitalia with bursa copulatrix very large, but not separated. Vaginal apophysis with inner plate conspicuously narrow; outer plate large and widened anteriorly. Epivaginal sclerite with a median carina sharply raised.

**Length:** Female 25mm.

**Type-examined:** Holotype female, Huch'ang, PB, N. Korea, 15, VIII, 1936, coll. S.M. Lee.

**Remark:** The present new species somewhat resembles *Damaster* (*Koreacoptolabrus*) *constricticollis* (Kraatz, 1886) in external appearance, but easily separated from the latter by the structure of pronotum.

Subgenus *Koreacoptolabrus* Kwon et Lee, subgen. nov. 소옹막강벌레 아속

Type-species: *Coptolabrus constricticollis* Kraatz, 1886

Type-locality: U.S.S.R. (Maritime Territory: Suyfun).

**Diagnosis:** Body generally small to large sized, elongate oval and markedly convex. Coloring black, with various rich metallic luster on dorsum.

Head stout cylindrical, often macrocephalism present; frontal impressions prominent and broadly deep, not exceeding middle of eyes; vertex flat or slightly convex, not transversely grooved but evenly continuous posteriorly, with punctures prominent and rather sparse. Mandibles generally long and narrow, gradually tapering to apices, with inner margins gently to slightly round; dorsal surface with fine sparse punctures; retinacula asymmetrical, right one often larger. Maxillary palpi with apical segments strikingly subtriangularly extending distally in male, somewhat ax-like in shape. Labium generally without setae on mentum; median tooth broad subtriangular or strongly developed into a spine-like process; labial palpi with apical segments strikingly subtriangularly extending distally and ax-like in male, with penultimate segments bisetose. Submentum usually less convex, generally lacking gular setae. Eyes usually less prominent and comparatively small.

Antennae slender and long, often reaching near middle of elytra in male, with 2nd segments generally exceeding half length of 3rd segments; 2nd to 4th segments usually slightly compressed basally; hairy segments simple, without ventral hairless areas in both sexes.

Pronotum narrow to wide, monosetose on each side with posterior marginal setae absent; anterior margin well defined and swollen; lateral margins very narrowly defined and roundly contracted anteriorly, sometimes subangulate mesally and conspicuously to very strongly constricted before hind angles where the marginal carinae are evanescent and pronotal epipleura are visible from above; hind angles triangularly produced outwards; basal foveae deeply impressed near to hind angles, or continuously depressed to the basal constriction.

Elytra elongate oval and conspicuously convex, usually broadest behind middle in male, but at middle in female, always without mucrones apically; sculpture fundamentally triploid heterodyname, with primary intervals interrupted frequently and forming large callosities; secondaries forming a row of small callosities; tertiaries rudimental or sometimes fused with primaries; grounds coarse and roughly sculptured; lateral margins narrow, with preapical emarginations and humeral serrations entirely absent; shoulders roundly protrudent. Hind wings strikingly atrophied into small lobes.

Basal 3 fore tarsi dilated in male. Chaetotaxy of hind coxae trisetose, having anterior, posterior, and postero-proximal ones. Hind trochanters smooth, without any setiferous pore. Abdomen with transverse sulci entirely absent.

Male aedeagus roundly arcuate cylindrical, not so broad as in other related subgenera, with end piece short and roundly terminated; ostium bilobate at its basal area, short or long. Endophallus short to moderately long, with a ligula greatly degenerated into a small patch of pigmented granules; copulatory piece entirely absent.

Female genitalia with bursa copulatrix large. Vaginal apophysis with inner plate strikingly narrow; outer plate broad and large.

**Remark:** This new subgenus resembles closely subgen. *Acoptolabrus* Morawitz, 1886 s. str. in general appearance, but is separated from it by the structure of pronotum in having lateral margins

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strongly constricted before hind angles where the marginal carinae are evanescent and hypomera are easily visible from above. The hind angles are conspicuously acute and produced outwards, always lacking the posterior marginal seta on each corner. The chaetotaxy of hind coxa is generally trisetose, which is also characteristic in this subgenus and can be employed to distinguish it from other related subgenera which usually bear bisetose chaetotaxy on each hind coxa, for instances, in *Acoptolabrus* s. str. the postro-proximal seta or sometimes the anterior one is absent whereas the posterior one is always present, while in *Coptolabrus* and *Damaster* s. str. the anterior seta is always absent whereas the other 2 seate are generally present.

The male aedeagus also differs from that of *Acoptolabrus* s. str. in being more slender cylindrical shaft and in having bilobate preostium.

Key to species of *Koreacoptolabrus*

1. Head prominently stout. Labium with a strikingly developed long conical process on mentum. Pronotum strongly constrict posteriorly, basal area usually narrower than anterior margin . . . . . *Damaster (Koreacoptolabrus) mirabilissimus*
- Head comparatively slender. Labium normal, not producing a long conical process on mentum. Pronotum moderately constrict posteriorly, basal area generally as wide as or slightly wider than anterior margin . . . . . *Damaster (Koreacoptolabrus) constricticollis*

33. *Damaster (Koreacoptolabrus) constricticollis* Kraatz, 1886

조롱박딱정벌레 (조롱박늑속딱정벌레)

*Coptolabrus constricticollis* Kraatz, 1886, Deutsch. Ent. Zeitschr. 30(1):241-242, pl.1(1, 3).

Type-locality: U.S.S.R. (Maritime Territory: Suyfun).

**Description:** General coloration black, with strong metallic luster; head above and pronotum reddish coppery; elytra usually bright greenish, with elevated parts of intervals black; or rarely with dorsum reddish coppery to brownish coppery. Under surface and legs polished, often with reddish coppery to purple or greenish coppery luster.

Head comparatively less stout, rather elongate cylindrical; frontal impressions relatively widely deep, often reaching before middle of eyes. Vertex roundly convex between frontal impressions or eyes, not transversely grooved but evenly continuous posteriorly, with lateral carinae more or less subparallel; punctures deep prominent and sparse, somewhat rugulose. Mandibles with dorsal surface smooth, with very fine sparse punctures; retinacula asymmetrical, apparently visible from above, right one more protrudent inwards. Eyes comparatively small, more protrudent laterally in male. Maxillary palpi moderately long, with apical segments apparently longer than penultimate segments in both sexes, ax-likely strongly dilated distally in male. Labium with mentum generally lacking setae; median tooth flat and broad subtriangular, shorter than its lateral lobes; labial palpi moderately long, with apical segments ax-likely strongly dilated in male. Submentum flat or slightly convex, generally lacking gular setae.

Antennae slender, reaching before middle of elytra in male whereas basal third in female; hairy segments simple in both sexes, without ventral hairless areas.

Pronotum slightly longer or sometimes about as long as wide, monosetose laterally, with posterior marginal setae absent; anterior margin well defined and greatly swollen, often more or less straight; lateral margins very narrowly defined and somewhat roundly contracted anteriorly, often very obscurely subangulate mesally where there is a median marginal seta on either side, and conspicuously convergent there from to basal constriction where marginal carinae are evanescent and hypomera are visible from above; hind angles triangularly produced outwards; basal

foveae deeply impressed close to hind angles; median line weak, with posterior portion very slightly carinate; punctures prominent, transversely rugose.

Elytra elongate oval and markedly convex mesally, with sculpture triploid heterodyname; primary intervals composed of a row of broad large rectangular callosities with smooth surface which are mostly fused laterally with rudimentary tertiaries; tertiaries granular, or sometimes continuous longitudinally to form short and irregular lines; secondaries forming a row of very small callosities between primaries; grounds coarse and roughly sculptured; lateral margins somewhat broad and sharp narrowly defined, with shoulders moderate roundly protrudent. Chaetotaxy of hind coxae trisetose.

Male aedeagus somewhat cylindrical, roundly arcuate mesally; end piece small and short, deep roundly terminated; ostium bilobate and well developed. Endophallus moderately long, with a ligula greatly degenerated into a small patch of pigmented granules; copulatory piece entirely absent.

Female genitalia with bursa copulatrix large, but not separated. Vaginal apophysis with inner plate strikingly narrow; outer plate broad, round oval. Spermatheca somewhat stout at proximal portion.

Length: Male 21-29mm, female 27-37mm.

Distribution: Korea, China (Manchuria), U.S.S.R. (Maritime Territory).

#### Key to subspecies of *Damaster (Koreacoptolabrus) constricticollis*

1. Elytra with callosities more or less prominent; innermost secondary intervals fused with suture apically. Male aedeagus with a rudimental ligula somewhat small patch-like . . . . .  
 . . . . . *Damaster (Koreacoptolabrus) constricticollis constricticollis*  
 —. Elytra with callosities gradually weaker on distal half; innermost secondary intervals evanescent apically. Male aedeagus with a rudimental ligula somewhat small corn-like at distal portion . . . . *Damaster (Koreacoptolabrus) constricticollis chiricola* subsp. nov.

#### 33-1. *Damaster (Koreacoptolabrus) constricticollis constricticollis* (Kraatz, 1886) 조롱바딱정벌레

*Coptolabrus constricticollis* Kraatz, 1886, Deutsch. Ent. Zeitschr. 30(1): 241-242, pl.1(1,3).

*Coptolabrus leechi* Bates, 1888, Proc. Zool. Soc. Lond.: 369 ①.

*Carabus (Coptolabrus) constricticollis grallatorius* + *C. (C.) leechi*: Hauser, 1921, Zool. Jahrb. 45, Abt. Syst.: 147-148 ①-②.

*Coptolabrus Leechi*: Kano, 1923, Ins. World. 27(315):379 ③.

*Coptolabrus Leechi*: Kano, 1924, Ibid. 28(326):379.

*Carabus (Acoptolabrus) constricticollis* var. *grallatorius* + *C. (A.) Leechi*: Csiki, 1927, Col. Cat. 91: 151-152 ①.

*Coptolabrus (Acoptolabrus) leechi* (sic): Lapouge, 1931, Gen. Ins. 192: 482 (Corée).

*Carabus (Coptolabrus) Sect. Acoptolabrus) constricticollis*: Breuning, 1936, Best.-Tab. eur. Col. 110:1493-1495 ①-②, ④-⑤.

*Carabus (Acoptolabrus) constricticollis* + *C. (A.) grallatorius* (sic) + *C. (A.) leechi*: Yano, 1941, Nipp. Koch. 4(1):16 ①, ⑥-⑦.

*Coptolabrus leechi*: Breuning, 1950, Ent. Arb. Mus. G. Frey. 1:204 ①, ⑧.

*Acoptolabrus constricticollis constricticollis* + *A.c.c.m. latioricollis* Mandl, 1954, ibid. 5(1):397-398 ③, ⑦, ⑨.

*Carabus constricticollis*: Cho, 1957, Hum. & Sci., Nat. Sci. Kor. Univ. 2: 182 (Korea).

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*Carabus consstricticollis*: Cho, 1963b, Journ. Nat. Acad. Sci. Rep. Kor. Nat. Sci. Ser. 4:86 <sup>10-13</sup>.

*Carabus consstricticollis*: Zool. Soc. Kor., 1968, Nom. An. Kor. 2:98 (Korea).

*Carabus consstricticollis*: Cho, 1969, Ill. Encycl. Faun. & Flor. Kor. 10: 133-134, pl. 5 (24) (N. Korea).

*Acoptolabrus consstricticollis*: Tamanuki, 1970, Beaut. Beetl. World.: 29-32 (N. Korea).

*Acoptolabrus consstricticollis*: Tamanuki, 1972a, Nat. & Ins. 7 (8):4 (North Korea).

*Acoptolabrus consstricticollis*: Tamanuki, 1972b, Ibid. 7(10):5 (North Korea).

*Acoptolabrus consstricticollis consstricticollis*: Lee, 1977, Kor. Journ. Ent. 7(2) <sup>13-15</sup>.

*Damaster (Acoptolabrus) consstricticollis grallatorius*: Yasuda et Okajima, 1980, Beetl. World: 17, 138 (Korea).

*Damaster (Acoptolabrus) consstricticollis*: Sakaguti, 1981, Ins. World. 5: 30, pl. 8 (7, 8) <sup>16</sup>.

**Type-locality**: U.S.S.R. (Maritime Territory: Suifun).

**Description**: Pronotum markedly wrinkled transversely, with punctures prominent. Elytral sculpture usually strongly rough and variable, with primary intervals comparatively prominent and only very slightly smaller distally; innermost secondaries usually fused with median suture apically.

Male aedeagus with end piece short and small, deep roundly terminated; endophallus with a ligula greatly degenerated into a small patch of pigmented granules, not corn-likely sclerotized.

**Length**: Male 21-29mm, female 27-37mm.

**Locality**: GG : Seoul <sup>8</sup>.

GW : Mt. Odaesan <sup>15</sup> (=Mt. O-Dae <sup>14</sup>), Mt. T'aebaeksan (=Mt. Tae-Baeg <sup>15</sup>).

HB : Ch'ongjin (=Chungjin <sup>10</sup>, Port Seishien, <sup>2</sup> Seishin <sup>7</sup>), Chuul (=Chuul <sup>11</sup>), Hoeryong (=Hoeryung <sup>12</sup>, Hoirjong <sup>5</sup>), Musan (=Masan <sup>9</sup>: sic), Onp'o (=Ompo <sup>4</sup>), Mt. Tojongsan (=Mt. Tosho near Mt. Kwanbo <sup>6</sup>).

HN : Wonsan <sup>3</sup> (=Gesnsan <sup>1</sup>).

PB : Huch'ang (=Fuchang <sup>13</sup>).

**Distribution**: Korea (Northern & central part), China (Manchuria: new record, Yapuloni, 1 female, ?, VII, 1938, coll. S.M. Lee), U.S.S.R. (Maritime Territory).

**Remark**: Roeschke (1921) described subsp. *grallatorius* based on the material from Port Seishien (=Ch'ongjin: HB), but Breuning (1936) treated it as a junior synonym of the nominate one.

Bates (1888) described *Coptolabrus leechi* based on the only 1 female material from Gensan (=Wonsan, HN, VI, 1886), where collected by J.H. Leech, the famous lepidopterist, and hitherto its taxonomic position has been poorly known without any further collecting records although Breuning (1950) confirmed it as a distinct species related to *schrencki* and *consstricticollis*, bearing reddish coppery external coloration. But this time, the authors examined the holotype which is now preserved in the collection of British Museum (Nat. Hist.) by an excellent colored photograph which conspicuously revealing the structure of pronotum and elytral sculpture. It was exactly fallen into the one of the individual color variations of *consstricticollis*, without any distinct specific characters, as sometimes seen from other collected materials.

Indeed, the variational range of the external feature of *consstricticollis* is considerably wide even in the same locality.

33-2. *Damaster (Koreacoptolabrus) consstricticollis chircola* Kwon et Lee, subsp. nov.

지리조롱박딱정벌레

**Description**: General appearance as in the nominate subspecies, but differs from it by the followings:

Pronotum usually more strongly transversely wrinkled. Elytral sculpture often less rough, with primary and secondary intervals somewhat gradually smaller distally; tertiaries rudimental distally and often evanescent; innermost secondaries evanescent apically, not fused with median suture.

Male aedeagus with end piece slightly more narrowed apically; endophallus with a rudimental ligula bearing distal small corn-like sclerite.

**Length:** Male 24mm, female 28-31mm.

**Type-examined:** Holotype male, Mt. Chirisan, GN, S. Korea, 6, VI, 1983, coll. Y.J. Kwon; paratypes: 1 female, same data as holotype; 1 female, 13, VII, 1981, the same locality and collector.

**Remark:** This new subspecies differs from the nominate one as shown above, and the type-locality, Mt. Chirisan becomes the southern limit of the distributional range of the species.

34. *Damaster (Koreacoptolabrus) mirabilissimus* Ishikawa et Deuve, 1982

멋조롱박딱정벌레

*Acoptolabrus leechi leechi* (nec Bates): Lee, 1977, Kor. Journ. Ent. 7(2):39 ①-④

*Damaster (Acoptolabrus) leechi* (nec Bates): Yasuda et Okajima, 1980, Beetl. World: 17, 138 (Alpine zone, Korea).

*Acoptolabrus leechi* (nec Bates): Yoon et Nam, 1980, Bas. Plan. Constr. Nat. Stud. Kyöngg. Prov.: 38 ⑤

*Damaster (Acoptolabrus) leechi* (nec Bates): Sakaguti, 1981, Ins. World. 5:30, pl.8 (4-6) ⑥-⑦

*Damaster (Acoptolabrus) mirabilissimus* Ishikawa et Deuve, 1982, Proc. Jap. Soc. Syst. Zool. 22:54-57 ⑧-⑩

**Type-locality:** Korea (Mt. T'aebaeksan and Mt. Sölaksan: GW).

**Description:** General coloration black, with strong metallic luster; head above and pronotum reddish coppery or rarely dark greenish red coppery; elytra bright green or sometimes bluish, with elevated parts of intervals black. Under surface and legs polished, often with reddish coppery to purple or greenish coppery luster.

Head strongly enlarged and stout, so as to forming macrocephalism which is slightly more conspicuous in female than in male; frontal impressions widely deep, reaching middle of eyes. Vertex rather flat and very wide, not transversely grooved but evenly continuous posteriorly; punctures deep prominent and sparse, somewhat rugose. Mandibles with very fine punctures on dorsal surface; retinacula markedly asymmetrical, with left one much narrower and fused with inner base of left mandible which is longitudinally impressed along incisor margin; right retinaculum with its anterior tooth conspicuously large and subquadrate, the posterior tooth atrophied or lost. Labium disproportionately small and deep roundly emarginate mesally at its anterior margin. Eyes relatively small, nearly not protrudent laterally. Genae below eyes strikingly extending laterally. Maxillary palpi moderately long, with apical segments apparently longer than penultimate segments in both sexes, ax-like strongly dilated distally in male. Labium with mentum generally lacking setae; median tooth strongly developed into a spine-like long process declined obliquely, apparently exceeding its lateral lobes; labial palpi with apical segments ax-like in male. Submentum slightly convex, lacking gular setae.

Antennae slender, often reaching middle of elytra in male; hairy segments simple in both sexes.

Pronotum wider than long (ratio, 1: 0.85), monosetose laterally, with posterior marginal setae absent; anterior margin well defined and greatly swollen, slightly emarginated mesally; lateral margins very narrowly defined and roundly contracted anteriorly, subangulate mesally

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where there is a median marginal seta on each side, and strongly convergent therefrom to basal constriction where marginal carinae are evanescent and hypomera are visible from above; hind angles triangularly produced outwards; basal foveae continuously depressed to the basal constriction; median line weak, not carinate posteriorly; punctures prominent, subtransversely rugose.

Elytra elongate oval, convex mesally, with sculpture triploid heterodyname; primary intervals composed of a row of broad large rectangular callosities with smooth surface which are mostly fused laterally with rudimentary tertiaries; tertiaries granular, or sometimes continuous longitudinally to form short and irregular lines, the fusion with primaries makes their sides irregularly notched; secondaries forming a row of smaller callosities; grounds coarse and roughly sculptured. Chaetotaxy of hind coxae trisetose.

Male aedeagus somewhat cylindrical, roundly arcuate mesally; end piece short and broad, with upper side subobliquely rounded; ostium bilobate, but short. Endophallus comparatively short, with a ligula greatly degenerated into a small patch of pigmented granules; copulatory piece entirely absent.

Female genitalia with bursa copulatrix large, but not separated. Vaginal apophysis with inner plate strikingly narrow; outer plate large, more or less ovoid.

Length: Male 23-24.5mm, female 25-28mm.

Locality: GB : Mt. Sobaeksan (=Mt. So-Baeg<sup>④</sup>).

GG : Mt. Myōngjisan<sup>⑤</sup> (=Mt. Myeong-Ji<sup>⑤</sup>).

GW : Odaesan<sup>⑦</sup> (=Mt. O-Dae<sup>①</sup>, Mt. Odae-san<sup>⑩</sup>), Mt. Sōlaksan (=Mt. Sorak<sup>⑨</sup>),  
Mt. T'aebaeksan<sup>⑥</sup> (=Mt. Tae-Baeg<sup>②</sup>, Mt. Taebaeg-san<sup>⑧</sup>).

Distribution: Korea (Peninsula proper).

Remark: The above species was previously known erroneously as *Acoptolabrus leechi* (Bates, 1888) after Lee (1977), one of the authors.

Intraspecific separation for this one seems too early due to the insufficient collected material at present, but in the authors' recognition the population from Mt. Odaesan, GW has a somewhat different external feature in having bluish to bluish green elytra whereas usually greenish in all the known material from the other localities, and in having primary intervals which are slightly more notched laterally than those of other localities and thus forming more or less irregularly rectangular callosities.

Subgenus *Coptolabrus* Solier, 1848

홍단딱정벌레 아속

*Coptolabrus* Solier, 1848, Stud. Ent. 1:58.

Type-species: *Carabus smaragdinus* Fischer, 1824

Type-locality: U.S.S.R. (E. Siberia).

*Eocarabus* Semenow, 1898c, Hor. Soc. Ent. Ross. 32:402-408.

Type-species: *Coptolabrus jankowskii* Oberthür, 1885

Type-locality: U.S.S.R. (Maritime Territory).

Diagnosis: Body generally large to strikingly large sized. Coloring black, often with various strong metallic luster on dorsum.

Head moderately stout to slightly cylindrical; frontal impressions moderately deep, often reaching before middle of eyes; vertex more or less flat or slightly convex, seldom transversely grooved but evenly continuous posteriorly, with punctures prominent and dense. Mandibles generally long and narrow, gradually arcuately tapering to apices, with inner margins gently round; dorsal surface usually smooth, often with fine sparse punctures. Maxillary palpi with apical seg-

ments strikingly subtriangular or gently extending distally in male. Labium generally without setae on mentum; median tooth very weakly subtriangular; labial palpi with apical segments strikingly subtriangular or gently extending distally in male, with penultimate segments bisetose. Submentum usually slightly convex, with or without gular setae. Eyes less protrudent laterally.

Antennae somewhat short to moderate, often reaching basal one-third of elytra in male, with 2nd segments generally exceeding half as long as 3rd segments; 2nd to 4th segments usually slightly compressed basally; hairy segments simple, without ventral hairless areas in both sexes.

Pronotum wide or narrower, often bisetose on either side or sometimes entirely without any setae; lateral margins narrowly defined, or broad and gradually raised, gently roundly or subangularly extending near middle, evenly sinuate before hind angles; hind angles obtuse or broadly rounded; basal foveae obscurely shallow to broad round; punctures deep prominent and comparatively dense.

Elytra elongate oval to elongate, usually with mucrones apically which are sometimes sharply well developed or degenerated; sculpture principally triploid heterodyname; primary intervals segmented frequently, or forming a row of prominent callosities or strong tubercles; secondaries as in the primaries but usually smaller; tertiaries rudimental or not traceable; lateral margins narrow to broad, with preapical emarginations and humeral serrations entirely absent; shoulders rather broad. Hind wings strikingly atrophied into small lobes.

Basal 3 fore tarsi dilated in male. Chaetotaxy of hind coxae generally bisetose, having posterior and postero-proximal setae, but anterior setae are always absent. Hind trochanters smooth, without any setiferous pore ventrally. Abdomen with transverse sulci prominent and sharply carved, sometimes weak mesally.

Male aedeagus generally broad, roundly arcuate in lateral shape, with end piece short and deep roundly terminated; ostium with an ovoid lobe at its basal area. Endophallus somewhat short to long, with aggonoporial lobe well developed; distal portion of dorsal wall roundly extending laterally and strikingly coriaceous below the aggonoporial lobe; ligula greatly degenerated into a small patch of pigmented granules; copulatory piece entirely absent.

Female genitalia with bursa copulatrix very large and strikingly developed. Vaginal apophysis with inner plate much smaller than outer one which is rather irregular in shape and broad.

#### Key to species of *Coptolabrus*

1. Elytra with primary intervals linearly costate and interrupted frequently, somewhat as wide as or slightly wider than secondaries which are usually more shortly interrupted . . . . . *Damaster (Coptolabrus) jankowskii*
- Elytra with primary intervals forming a row of ovoid to elongate oval callosities, much larger than secondaries which are small and rather round . . . . . *Damaster (Coptolabrus) smaragdinus*

35. *Damaster (Coptolabrus) jankowskii* (Oberthür, 1885) 멧쟁이 딱정벌레 (양코스 키틱정벌레, 양코브스키틱정벌레)

*Coptolabrus Jankowskii* Oberthür in Kraatz, 1885, Deutsch. Ent. Zeitscher. 29:309.

Type-locality: U.S.S.R. (Martime Territory: Vladivostock).

Description: General coloration black, with various strong metallic luster on dorsum; vertex and pronotum reddish golden coppery, greenish coppery, bluish green, violaceous or purple; elytra greenish to dark green, bluish green, violaceous blue, dark blue, or sometimes black, with lateral

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margins bearing strong luster.

Head moderately stout; frontal impressions less deep, sometimes reaching before middle of eyes, punctulate, rugulose posteriorly; vertex very slightly convex, seldom transversely grooved posteriorly, with punctures densely prominent. Mandibles with very fine punctures on dorsal surface; right retinaculum slightly smaller than left one. Maxillary palpi moderately long, with apical segments gently extending distally and slightly longer than penultimate segments. Labium with mentum lacking setae; median tooth very weak, apparently shorter than its lateral lobes; labial palpi moderately long, with apical segments gently extending distally and shorter than penultimate segments. Submentum slightly convex, with a pair of gular setae present or entirely absent. Eyes moderate, but less produced laterally.

Antennae comparatively short, often slightly exceeding basal one-third of elytra in male; hairy segments simple in both sexes.

Pronotum wider than long (ratio, 1: 0.8-0.85), usually bisetose on either side, more or less evenly slightly convex mesally; anterior margin slightly emarginate mesally, linearly defined; lateral margins moderate narrowly defined anteriorly and somewhat gradually raised posteriorly, broad roundly extending mesally and gently sinuate before hind angles; hind angles obtuse or broadly rounded; basal foveae obscurely shallow to broad roundly depressed; median line weak; punctures deep prominent and dense.

Elytra elongate oval, with grounds mat; mucrones short but sharply pointed, or rudimental; primary intervals linearly costate and interrupted frequently; secondaries as in the primaries, but usually weaker and more frequently segmented; tertiaries not present, but the space between primary and secondary intervals granulate and fine sparsely punctulate; lateral margins narrow, with umbilicate series very weak and bearing strong metallic luster; shoulders broad to narrowly rounded. Hind wings strikingly atrophied, very small subtriangular lobe-like and somewhat thickened.

Chaetotaxy of hind coxae bisetose, with anterior setae entirely absent.

Male aedeagus generally broad, roundly arcuate basally and distally; end piece small and short, deep roundly terminated; ostium with an ovoid large lobe at its basal area. Endophallus comparatively short, with aggonoporial lobe somewhat tongue-like, about as long as wide or slightly shorter; distal portion of dorsal wall with a strong coriaceous semicircular process on either side; ligula greatly degenerated into a small patch of pigmented granules; copulatory piece entirely absent.

Female genitalia with bursa copulatrix very large and strikingly well developed, but not separated. Vaginal apophysis with inner plate ovoid, much smaller than outer plate.

**Length:** Male 28-35mm, female 30-40mm.

**Distribution:** Korea, U.S.S.R. (Maritime Territory).

**Remark:** Oberthür (1883) firstly named and figured the present species without giving any statements of the valid description, and this invalidity was reinforced shortly after by Oberthür in Kraatz (1885) who gave the legal description.

**Key to subspecies of *Damaster (Coptolabrus) jankowskii***

1. Elytra with mucrones short, but usually sharply pointed; intervals often slightly more costate. Episterna and lateral parts of venter with punctures often less deep prominent; sulci prominent, but often weaker mesally . . . . . 2.
  - Elytra with mucrones usually rudimental or obscurely developed; intervals usually weakly costate. Episterna and lateral parts of venter with punctures often strongly prominent; sulci rather evenly prominent . . . . . 3.

2. Vertex and pronotum usually reddish golden coppery, or rarely greenish coppery. Elytra greenish to dark green, with lateral margins bearing reddish golden coppery to greenish coppery luster . . . . . *Damaster (Coptolabrus) jankowskii jankowskii*
  - Vertex and pronotum bluish green to violaceous blue. Elytra bluish green to violaceous blue or dark blue, with lateral margins bearing bluish green to violaceous luster . . . . . *Damaster (Coptolabrus) jankowskii kangwonensis* subsp. nov.
3. Vertex and pronotum reddish golden coppery to purple. Elytra greenish to dark green, or dark blue, with lateral margins bearing greenish coppery, reddish golden coppery or reddish purple luster . . . . . 4.
  - Vertex and pronotum bluish green coppery to violaceous blue. Elytra dark bluish green to dark violaceous blue or black, with lateral margins bearing purple luster . . . . . *Damaster (Coptolabrus) jankowskii kojensis*
4. Elytra with mucrones more or less obscurely present or rudimental; shoulders moderately broad. Female vaginal apophysis with inner plate moderate . . . . . 5.
  - Elytra with mucrones entirely rudimental or absent; shoulders often comparatively narrow and rounded. Female vaginal apophysis with inner plate somewhat more roundly ovoid than those of other subspecies . *Damaster (Coptolabrus) jankowskii quelpartianus*
5. Labrum broad, deep roundly emarginate mesally, prominently protrudent antero-laterally on either side. Vertex and pronotum tinted with purple. Elytra dark bluish purple, with lateral margins bearing purple or greenish golden coppery luster . . . . . *Damaster (Coptolabrus) jankowskii elegans* subsp. nov.
  - Labrum moderate, roundly emarginate mesally, gently protrudent antero-laterally on each side. Vertex and pronotum reddish coppery. Elytra dark greenish, with lateral margins bearing golden coppery to greenish golden coppery or reddish golden coppery luster . . . . . *Damaster (Coptolabrus) jankowskii fusanus*

35-1. *Damaster (Coptolabrus) jankowskii jankowskii* (Oberthür, 1885)      몇쟁이 딱정벌레

- Coptolabrus Jankowskii* Oberthür, 1883, Col. Nov. 1:pl.1(1) (nom. nud.).  
*Coptolabrus Jankowskii* Oberthür in Kraatz, 1885, Deutsch. Ent. Zeitschr. 29:309.  
*Coptolabrus Jankowskii*: Reitter, 1895, Wien. Ent. Zeit. 14(4):104 (Korea).  
*Carabus (Eocarabus) Jankowskii*: Semenow, 1898c, Hor. Soc. Ent. Ross. 32:402-408(Korea).  
*Carabus (Coptolabrus) jankowskii*: Hauser, 1921, Zool. Jahrb. 45. Abt. Syst.: 156-163, pl.5(1) <sup>①</sup>.  
*Carabus (Coptolabrus) Jankowskii*: Csiki, 1927, Col. Cat. 91:156(Korea).  
*Eocarabus jankowskii jankowskii*: Lapouge, 1931, Gen. Ins. 192:538 (Corée septentr.).  
*Coptolabrus jankowskii*: Cho, 1934, Journ. Chos. Nat. Hist. Soc. 17:84 <sup>②</sup>.  
*Carabus (Coptolabrus) Sect. Coptolabrus jankowskii jankowskii* n. *jankowskii*: Breuning, 1936, Best.-Tab. eur. Col. 110:1511 <sup>①, ③-⑥</sup>.  
*Coptolabrus jankowskii*: Mochizuki et Tsunekawa, 1937, Journ. Chos. Nat. Hist. Soc. 22:76 <sup>⑦-⑧</sup>.  
*Carabus (Coptolabrus) jankowskii* + *C. (C.) horvathi*: Yano, 1941, Nipp. Koch. 4(1):17 <sup>①, ⑨-⑪</sup>.  
*Coptolabrus jankowskii*: Cho, 1947, Bull. Zool. Sect. Nat. Sci. Mus. Seoul. 2(3):70 <sup>⑫</sup>.  
*Carabus jankowskii* + *C. fruhstorferi* (nec Roeschke): Cho, 1957, Hum. & Sci., Nat. Sci. Kor. Univ. 2:182(Korea).  
*Damaster (Coptolabrus) jankowskii*: Nakane, 1962, Ins. Jap. 2(3):65, 69, f.61 (Korea).

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- Carabus jankowskii* + *C. fruhstorferi* (nec Roeschke): Cho, 1963b, Journ. Nat. Acade. Sci. Rep. Kor. Nat. Sci. Ser. 4:87 <sup>⑤</sup>, <sup>⑬</sup>-<sup>⑭</sup>.
- Carabus jankowskii*: Zool. Soc. Kor., 1968, Nom. An. Kor. 2:98(Korea).
- Carabus Jankovskii* (sic et partim): Cho, 1969, Ill. Encycl. Faun. & Flor. Kor. 10:134-135, pl.5(26) (N.,C.&S. Korea).
- Coptolabrus jankowskii*: Tamanuki, 1970, Beaut. Beetl. World.: 21-24 (Korea).
- Carabus jankowskii* (sic): Kim et Kim, 1972a, Rep. Korea. Ass. Cons. Nat. 5:76 <sup>⑬</sup>.
- Carabus jankovskii* (sic): Kim et Kim, 1972b, Ibid. 6:196 <sup>⑭</sup>.
- Coptolabrus jankowskii* (partim): Tamanuki, 1972, Nat. & Ins. 7(8):5 (Korea).
- Carabus jankowskii*: Kim et Kim, 1974, Rep. Kor. Ass. Cons. Nat. 8:106 <sup>⑮</sup>.
- Carabus jankowskii*: Kim et al., 1976, Ibid. 9:101 <sup>⑯</sup>.
- Coptolabrus jankowskii jankowskii* (partim): Lee, 1977, Kor. Journ. Ent. 7(2):39 <sup>⑰</sup>-<sup>⑱</sup>.
- Coptolabrus jankowskii*: Kim et Nam, 1977, Rep. Kor. Ass. Con. Nat. 11:p30 <sup>⑲</sup>.
- Damaster (Coptolabrus) jankowskii* (partim): Nakane, 1977a, Nat. & Ins. 12(12):5 (Korea).
- Coptolabrus jankowskii* (partim): Kim, 1978, Distr. Atl. Ins. Kor. 2:21, pl.6 (CA 06) <sup>⑳</sup>, <sup>㉑</sup>, <sup>㉒</sup>, <sup>㉓</sup>.
- Carabus jankowskii*: Shin, 1979, Rep. Kor. Ass. Con. Nat. 15:142 <sup>㉔</sup>-<sup>㉕</sup>.
- Coptolabrus jankowskii*: Yoon et Nam, 1979, Ibid. 17:144 <sup>㉖</sup>-<sup>㉗</sup>.
- Coptolabrus jankowskii*: Yoon et Nam, 1980, Bas. Plan. Constr. Nat. Stud. Kyōngg. Prov.: 83 <sup>㉘</sup>.
- Damaster (Coptolabrus) jankowskii*: Yasuda et Okajima, 1980, Beetl. World.:18,138 (Korea).
- Damaster (Coptolabrus) jankowskii jankowskii*: Sakaguti, 1981, Ins. World. 5:38, pl.10 (1,2) <sup>㉙</sup>.

**Type-locality:** U.S.S.R. (Maritime Territory: Vladivostock).

**Description:** Vertex and pronotum usually reddish golden coppery, or rarely greenish coppery; elytra greenish to dark green, with lateral margins bearing reddish golden coppery to greenish coppery luster.

Elytra with muscrones short, but usually sharply pointed; sculpture often rather prominent; primary intervals more or less strikingly costate and very frequently interrupted by a series of deep foveae; secondaries less raised than primaries, and more shortly segmented; grounds rough.

Thoracic episterna and lateral parts of venter with punctures often less deep prominent; sulci prominent, but often weaker mesally.

**Length:** Male 28-35mm, female 30-40mm.

- Locality:** CB : Mt. Songnisan <sup>㉚</sup> (Mt. Sog-Ni <sup>㉛</sup>), Mt. Wōlaksan (=Mt. Weolak <sup>㉜</sup>).
- CN : Mt. Ch'ilgapsan (=Mt. Chilgab <sup>㉝</sup>), Mt. Kwangdōksan, Mt. Kyeryong san <sup>㉞</sup> (=Mt. Ge-Ryong <sup>㉟</sup>, Mt. Gyeryong <sup>㊱</sup>, Tonghaksa <sup>㊲</sup>), Mt. Sōdaesan, Wōnjōngni.
- GB : Mt. Chuhūlsan (=Mt. Juheul <sup>㊳</sup>), Mt. Hwanghaksan, Mt. Kūmosan, Kyōngju <sup>㊴</sup>, Mt. P'algongsan, Mt. Sobaeksan (=Mt. So-Baeg <sup>㊵</sup>), Mt. T'ohamsan, Mt. Unmunsan.
- GG : Mt. Aengmubong <sup>㊶</sup> (=Mt. Aeng-Mu-Bong <sup>㊷</sup>, Pogwangsa <sup>㊸</sup>), Ch'ōngp'yōng (=Cheong-Pyeong <sup>㊹</sup>) Mt. Ch'ōnmasan <sup>㊺</sup>, Inch'ōn (=Chemulpo <sup>㊻</sup>, Inchun <sup>㊼</sup>), Kaesōng <sup>㊽</sup>, Kōnjam (=Gon-Ji-Am <sup>㊾</sup>), Kwangnūng (=Gwang-Neung <sup>㊿</sup>), Mt. Myōngjisan <sup>㋀</sup> (=Mt. Myeong-Ji <sup>㋁</sup>), Namhansansōng <sup>㋂</sup>, Mt. Pogaesān <sup>㋃</sup>, Mt. Pukhansan (=Mt. Bug-Han <sup>㋄</sup>), Pyōkche <sup>㋅</sup>, Seoul <sup>㋆</sup> (=Chōngnūng <sup>㋇</sup>, Sōgang <sup>㋈</sup>, U-Ei-Doing <sup>㋉</sup>, Yōnhidong <sup>㋊</sup>), Mt. Tobongsan (=Mt. Do-Bong <sup>㋋</sup>), Mt. Tōgamsan (=Mt. Deog-Am <sup>㋌</sup>), Mt. Wangbangsan <sup>㋍</sup> (=Mt. Wang-Bang <sup>㋎</sup>), Mt.

Yongmunsan<sup>57</sup>.GN : Mt. Kayasan<sup>57</sup> (=Haeinsa<sup>58</sup>), Milyang<sup>15</sup>, Mt. Sinbulsan, Mt. Yöngch'wisan.GW : Mt. Ch'iaksan<sup>49</sup> (=Mt. Chi-Ag<sup>25</sup>, Mt. Chi-ak san<sup>22</sup>, Kuryongsa<sup>50</sup>), Hongch'ön<sup>45</sup>, Kangnūng<sup>48</sup>, Mt. Kūmgangsan<sup>47</sup> (=Mt. Diamond<sup>12</sup>, Kūmgang-san<sup>17</sup>), Naksansa Temple<sup>44</sup>, Odong<sup>46</sup>, Mt. Pangdaesan (=Mt. Bang-Dae<sup>24</sup>), Mt. Sölaksan<sup>51</sup> (=Mt. Seol-Ag<sup>23</sup>).HB : Ch'öngjin (=Chungzin<sup>15</sup>, Seishien<sup>3</sup>, Seishin<sup>11</sup>), Chuul (=Chuul<sup>14</sup>, Shuotu<sup>10</sup>: sic), Mt. Kwanmobong<sup>2</sup>, Onp'o (=Ompo<sup>4</sup>).HN : Kapsan<sup>42</sup>, Songhūng<sup>41</sup>, Wönsan (=Gensan<sup>1</sup>, Wonsan<sup>13</sup>).JB : Mt. Naejangsan<sup>21</sup>, Mt. Tögyusan<sup>10</sup> (=Muju Gucheondong<sup>19</sup>, Muju Kuch'öndong<sup>59</sup>).JN : Mt. Chogyesan (=Mt. Jogyesan<sup>40</sup>, Sönamsa<sup>72</sup>, Songgwangsa<sup>71</sup>), Mt. Paegyongsan (=Mt. Baeg-Yang<sup>39</sup>), Mt. Taedunsan<sup>73</sup> (=Mt. Daedunsan in Haenam<sup>20</sup>), Mt. Turyunsan.PB : Huch'ang (=Konsho<sup>9</sup>: sic), Mt. Myohyangsan<sup>43</sup>.

Distribution: Korea, U.S.S.R. (Maritime Territory).

35-2. *Damaster (Coptolabrus) jankowskii kangwonensis* Kwon et Lee, subsp. nov. 강원멋쟁이딱정벌레*Coptolabrus jankowskii jankowskii* (partim): Lee, 1977, Kor. Journ. Ent. 7(2):39<sup>①-③</sup>.*Coptolabrus jankowskii* (partim): Kim, 1978, Distr. Atl. Ins. Kor. 2:21, p1.6 (CA 06)<sup>④</sup>.*Damaster (Coptolabrus) jankowskii*: Yasuda et Okajima, 1980, Beetl. World.: 18, 138<sup>⑤</sup>.**Description:** Vertex and pronotum bluish green to violaceous blue; elytra bluish green to violaceous blue or dark blue, with lateral margins bearing bluish green to violaceous luster.

Elytra with mucrones short, but often sharply pointed; sculpture rather prominent; primary intervals more or less strikingly costate and very frequently interrupted by a series of deep foveae; secondaries less raised than primaries, and more shortly segmented; grounds rough.

Thoracic episterna and lateral parts of venter with punctures usually less deep prominent; sulci prominent, but weaker mesally.

**Length:** Male 29-34mm, female 32-38mm.**Type-examined:** Holotype male, Mt. T'aebaeksan, GW, C. Korea, 27, VI, 1976, coll. S.M. Lee; paratypes: 2 males, 1 female, same data as holotype; Mt. Odaesan, GW, C. Korea, 5 males, 2 females, 5, VIII, 1971, coll. S.M. Lee; 3 males, 2 females, 9, VIII, 1976, the same locality and collector; Mt. Tut'asan, GW, C. Korea, 22 males, 19 females, 9, VIII, 1983, coll. Y.J. Kwon.**Locality:** GW : Mt. Odaesan (=Mt. O-Dae,<sup>①</sup> Odae Mt.<sup>⑤</sup>), Mt. Sogūmgang<sup>④</sup> (=So-Geum-Gang<sup>②</sup>), Mt. T'aebaeksan (=Mt. Tae-Baeg<sup>③</sup>).**Remark:** The present new subspecies is separated from other violaceous colored races by the sculpture of elytra.35-3. *Damaster (Coptolabrus) jankowskii kojensis* Kurosawa et Kudo, 1980

거제멋쟁이딱정벌레

*Coptolabrus jankowskii fusanus* (partim nec Born): Lee, 1977, Kor. Journ. Ent. 7(2):39<sup>①-②</sup>.*Damaster (Coptolabrus) jankowskii kojensis* Kurosawa et Kudo, 1980, Bull. Nat. Sci. Mus. Ser. A (Zool.). 6(3):175-177<sup>③-④</sup>.*Damaster (Coptolabrus) jankowskii quelpartianus* (partim): Sakaguti, 1981, Ins. World. 5:38, p1.10 (8)<sup>⑤</sup>.

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**Type-locality:** Korea (Is. Kōjedo: GN).

**Description:** Vertex and pronotum bluish green coppery to violaceous blue; elytra dark bluish green to dark violaceous blue or black, with lateral margins bearing purple luster.

Elytra with mucrones somewhat rudimental or obscurely developed, very rarely sharp; sculpture rather weak; primary intervals weakly costate and frequently interrupted by a series of shallow or less deep foveae; secondaries less raised than primaries, and more shortly segmented; grounds finely granulate and punctulate.

Thoracic episterna and lateral parts of venter with punctures usually strongly prominent; sulci rather evenly prominent.

**Length:** Male 26-33mm, female 33-39mm.

**Locality:** GN : Is. Kōjedo <sup>⑤</sup> (=Koje-do Is. <sup>③</sup>, Mt. Og-Nyeo <sup>②</sup>), Mt. Muhaksan, Is. Namhaedo (=Mt. Geum-San <sup>①</sup>, Nan-hae Is. <sup>④</sup>: sic).

**Distribution:** Korea (Is. Kōjedo, Is. Namhaedo and its vicinity of southern maritime area).

35-4. *Damaster (Coptolabrus) jankowskii quelpartianus* (Hauser, 1932).

제주멧쟁이딱정벌레 (제주양코스기딱정벌레)

*Eocarabus jankowskii fusanus* (partim): Lapouge, 1931, Gen. Ins. 192:538 (Ile Quelpart).

*Carabus (Coptolabrus) jankowskii quelpartianus* Hauser, 1932, Mitt. Deutsch. Ent. Ges.:8.

*Carabus (Coptolabrus) Sect. Coptolabrus jankowskii quelpartianus* n. *quelpartianus*: Breuning, 1936, Best.-Tab. eur. Col. 110:1512 (Insel Quelpart).

*Carabus jankowskii quelpartianus*: Cho, 1957, Hum. & Sci., Nat. Sci. Kor. Univ. 2:182 (Korea).

*Damaster jankowskii quelpartianus*: Nakane, 1962, Ins. Jap. 2(3):65 (Is. Chejudo).

*Carabus jankowskii quelpartianus* + *C. fruhstorferi* (nec Roeschke): Cho, 1963a, Hum. & Sci., Nat. Sci. Kor. Univ. 6:201 (Quelpaert Island).

*Carabus jankowskii quelpartianus*: Cho, 1963b, Journ. Nat. Acad. Sci. Rep. Kor. Nat. Sci. Ser. 4:87 (Chejo-do).

*Carabus jankowskii quelpartianus* + *C. fruhstorferi* (nec Roeschke): Cult. & Inf. Min., 1968, Rep. Acad. Surv. Mt. Hanlasan: 258 <sup>①</sup>.

*Carabus jankowskii quelpartianus* + *C. fruhstorferi* (nec Roeschke): Zool. Soc. Kor., 1968, Nom. An. Kor. 2:98 (Korea).

*Carabus jankowskii* (partim): Cho, 1969, Ill. Encycl. Faun. & Flor. Kor. 10:134-135 (Is. Chejudo).

*Coptolabrus jankowskii quelpartianus*: Tamanuki, 1970, Beaut. Beetl. World.: 21-24 (Cheju Is.).

*Damaster fruhstorferi* (nec Roeschke): Komiya, 1971, Res. Bull. Plant Prot. 14:63 (Is. Chejudo)

*Carabus constricticollis* (nec Kraatz): Lee et Kwon, 1974, Nat. & Lif. 4:30 <sup>②</sup>.

*Coptolabrus jankowskii quelpartianus*: Lee, 1977, Kor. Journ. Ent. 7(2):39 <sup>③-④</sup>.

*Damaster (Coptolabrus) jankowskii quelpartianus*: Nakane, 1977a, Nat. & Ins. 12(12):5.

*Damaster jankowskii quelpartianus*: Nakane, 1977b, Bull. Nat. Sci. Mus. Ser. A (Zool.) 3(4):242 <sup>⑤-⑥</sup>.

*Coptolabrus jankowskii* (partim): Kim, 1978, Distr. Atl. Ins. Kor. 2:21, pl.6 (CA 06) <sup>⑦-⑧</sup>.

*Damaster (Coptolabrus) jankowskii quelpartianus* (partim): Sakaguti, 1981, Ins. World. 5:38, pl. 10 (6, 7) (Is. Chejudo).

**Type-locality:** Korea (Is. Chejudo).

**Description:** Vertex and pronotum reddish coppery to golden greenish coppery; elytra greenish blue to dark blue, with lateral margins bearing greenish coppery to reddish golden coppery luster.

Elytra with mucrones entirely rudimental or absent; sculpture rather weak; primary intervals weakly costate and frequently interrupted by a series of shallow foveae; secondaries less raised than primaries, and more shortly segmented; shoulders often comparatively narrow and rounded; grounds finely granulate and punctulate.

Thoracic episterna and lateral parts of venter with punctures strongly prominent; sulci rather sharply carved.

Female vaginal apophysis with inner plate somewhat more roundly ovoid than those of other subspecies.

**Length:** Male 29-31mm, female 30-36mm.

**Locality:** JJ: Chungmun, Mt. Hallasan<sup>⑨</sup> (=Mt. Hal-La<sup>③</sup>, Mt. Hanlasan<sup>①</sup>, Mt. Hanna<sup>⑤</sup>, T'amnagyeogok<sup>⑧</sup>), Hawŏn (=Ha-Weon<sup>④</sup>), Ōrimok<sup>⑦</sup>, Sanch'ōndan<sup>②</sup>. Sōgwip'o (=Seikiho<sup>⑥</sup>).

**Distribution :** Korea (Is. Chejudo).

**35-5. *Damaster (Coptolabrus) jankowskii elegans* Kwon et Lee, subsp. nov.** 지리멧쟁이딱정벌레

*Carabus frustorferi* (sic et nec Roeschke): Hyun et Woo, 1969, Bull. Seoul. Nat. Univ. For. 6:183-184<sup>①</sup>.

**Description:** Vertex and pronotum tinted with purple; elytra dark bluish purple, with lateral margins bearing purple or greenish golden coppery luster. Labrum broad, deep roundly emarginate mesally, prominently protrudent antero-laterally on each side.

Elytra with mucrones more or less obscurely present or rudimental, sculpture rather weak; primary intervals weakly costate and frequently interrupted by a series of shallow foveae; secondaries less raised than primaries, and more shortly segmented; grounds finely granulate and punctulate.

Thoracic episterna and lateral parts of venter with punctures moderately prominent.

**Length:** Male 31mm.

**Type-examined:** Holotype male, Mt. Chirisan, GN, S. Korea, 12, VI, 1983, coll. Y.J. Kwon; para-type: 1 male, same data as holotype.

**Locality:** GN : Mt. Chirisan (=Mt. Jiri<sup>①</sup>).

**Remark:** This new subspecies may be separated from other related violaceous races by the vertex and pronotum which are tinted with purple.

**35-6. *Damaster (Coptolabrus) jankowskii fusanus* (Born, 1907)**

부산멧쟁이딱정벌레 (부산양코스키탃정벌레, 남도멧쟁이 딱정벌레)

*Coptolabrus jankowskii fusanus* Born, 1907, Ent. Woch., Ins.-Boers, 24:52<sup>①</sup>.

*Carabus (Coptolabrus) jankowskii fusanus*: Hauser, 1921, Zool. Jahrb. 45. Abt. Syst.: 163<sup>①</sup>.

*Carabus (Coptolabrus) jankowskii* var. *fusanus*: Csiki, 1927, Col. Cat. 91:156<sup>①</sup>.

*Eocarabus jankowskii fusanus* (partim): Lapouge, 1931, Gen. Ins. 192:538 (Corée merid).

*Carabus (Coptolabrus* Sect. *Coptolabrus*) *jankowskii jankowskii* n. *fusanus*: Breuning, 1936, Best.-Tab. eur. Col. 110:1511<sup>①</sup>.

*Carabus (Coptolabrus) jankowskii fusanus*: Yano, 1941, Nipp. Koch. 4(1):17<sup>①</sup>.

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*Carabus jankowskii fusanus*: Cho, 1957, Hum. & Sci., Nat. Sci. Kor. Univ. 2:182 (Korea).

*Carabus jankowskii fusanus*: Cho, 1963b, Journ. Nat. Acad. Sci. Rep. Kor. Nat. Sci. Ser. 4:87<sup>②</sup>.

*Carabus jankowskii fusanus*: Zool. Soc. Kor., 1968, Nom. An. Kor. 2:98 (Korea).

*Coptolabrus jankowskii jankowskii* (partim): Lee, 1977, Kor. Journ. Ent. 7(2):39<sup>③</sup>.

**Type-locality:** Korea (Pusan: GN).

**Description:** Vertex and pronotum reddish coppery; elytra dark greenish, with lateral margins bearing golden coppery to greenish golden coppery or reddish golden coppery luster. Labrum moderate, roundly emarginate mesally, gently protrudent antero-laterally on each side.

Elytra with mucrones rudimental, or rather obscurely present; sculpture weak; primary intervals weakly costate and frequently interrupted by a series of shallow foveae; secondaries less raised than primaries, and more shortly segmented; grounds finely granulate and punctulate.

Thoracic episterna and lateral parts of venter with punctures strongly prominent; sulci rather sharply carved.

**Length:** Male 30-31mm, female 35-38mm.

**Locality:** Mt. Kŭmjŏngsan, Pusan<sup>②</sup>(=Fusan<sup>①</sup>, Mt. Seung-Hak<sup>③</sup>).

**Distribution:** Korea (Southern part around Pusan).

36. *Damaster (Coptolabrus) smaragdinus* (Fischer, 1824)

홍단딱정벌레

*Carabus smaragdinus* Fischer, 1824, Ent. Imp. Ross. 2:103, pl. 35(5).

**Type-locality:** U.S.S.R. (E. Siberia).

**Description:** General coloration black, with various strong metallic luster such as greenish, bluish green, greenish golden coppery, reddish coppery, reddish golden coppery or reddish brown tints on dorsum, except elevated parts of elytra which are black.

Head cylindrical; frontal impressions deep, sometimes reaching before middle of eyes, punctulate, rugulose postreiorly; vertex long, slightly convex mesally, seldom transversely grooved posteriorly, with punctures densely prominent. Mandibles with very fine punctures on dorsal surface; right retinacula slightly smaller. Maxillary palpi moderately long, with apical segments strongly triangular in male, longer than penultimate segments in both sexes. Labium with mentum lacking setae; median tooth very weak, apparently shorter than its lateral lobes; labial palpi moderately long, strongly triangular and ax-like in male. Submentum slightly convex, always lacking gular setae. Eyes moderate, but less protruding laterally.

Antennae short, apparently not reaching basal one-third of elytra in male; hairy segments simple in both sexes.

Pronotum wider than long (ratio, 1: 0.75-0.88), usually bisetose on either side, slightly convex; anterior margin roundly emarginate mesally, linearly defined; lateral margins moderately narrowly defined anteriorly, rather gradually raised postreiorly, often broad subangulately extending mesally and gently sinuate before hind angles; hind angles broadly rounded; basal foveae shallow to broad roundly depressed; mesal line weak; punctures deep prominent and dense.

Elytra ovoid to elongate oval, convex mesally, with mucrones well developed and sharply pointed, or rudimental; primary intervals composed of a row of large ovoid to elongate oval callosities with smooth surface; secondaries forming a row of smaller callosities; tertiaries usually absent, or rarely fused with primaries and forming their sides somewhat irregularly notched; grounds coarse and roughly sculptured, often somewhat network-like; lateral margins narrow, with umbilicate series weak, not more glossy than inner parts; shoulders broadly rounded. Hind wings

strikingly atrophied, very small subtriangular lobe-like and somewhat thickened.

Chaetotaxy of hind coxae bisetose, with anterior setae entirely absent. Abdomen with ventral sulci generally prominently carved.

Male aedeagus very broad, roundly bent basally and arcuate distally; end piece small and comparatively broad, gradually narrowed and deep roundly terminated; ostium with an ovoid lobe at its basal area. Endophallus comparatively long, with an aggonoporial lobe somewhat tongue-like, about as long as wide or apparently longer; distal portion of dorsal wall with a strong coriaceous round process on either side; ligula greatly degenerated into a small patch of pigmented granules; copulatory piece entirely absent.

Female genitalia with bursa copulatrix very large and strikingly well developed, but not separated. Vaginal apophysis with inner plate much narrower than outer plate.

**Length:** Male 24-38mm, female 26-45mm.

**Distribution:** Korea, China (Manchuria, Shantung, Honam), U.S.S.R. (Maritime Territory, Sachalin, E. Siberia).

**Remark:** The nominate subspecies is distributed in East Siberia and is distinguished from other races by the smaller and more ovoid body, having rudimental or very short elytral mucrones.

**Key to subspecies of *Damaster (Coptolabrus) smaragdinus***

1. Elytra with mucrones usually sharply pointed ..... 2.  
     — Elytra with mucrones very short to rudimental .....  
         ..... *Damaster (Coptolabrus) smaragdinus monilifer*
2. Elytra more or less glossy, or sometimes slightly mat. Male endophallus with an aggonoporial lobe apparently longer than wide ..... 3.  
     — Elytra strongly glossy. Male endophallus with an aggonoporial lobe about as long as wide .....  
         ..... *Damaster (Coptolabrus) smaragdinus fulminifer*
3. Dorsum mostly reddish coppery to golden greenish coppery. Elytra with intervals moderately raised; grounds often less roughly sculptured ..... 4.  
     — Dorsum entirely bright greenish to greenish blue coppery. Elytra with intervals strongly raised; grounds very roughly sculptured .....  
         ..... *Damaster (Coptolabrus) smaragdinus sangjaei* subsp. nov.
4. Elytra with primary callosities moderate and convex; the space between primary and secondary intervals usually wider than secondary callosities. Proepisterna moderately to strongly punctate ..... 5.  
     — Elytra with primary callosities strikingly large and flat; the space between primary and secondary intervals apparently narrower than secondary callosities. Proepisterna weakly punctate .....  
         ..... *Damaster (Coptolabrus) smaragdinus hongdoensis* subsp. nov.
5. Female apophysis with vertical plate bearing anterior process well developed; inner plate markedly elongate ..... *Damaster (Coptolabrus) smaragdinus hoenggandoensis* subsp. nov.  
     — Female apophysis with vertical plate bearing anterior process not or weakly developed; inner plate larger and broader .....  
         ..... *Damaster (Coptolabrus) smaragdinus branickii*

36-1. *Damaster (Coptolabrus) smaragdinus monilifer* (Tatum, 1847)

제주홍단딱징벌레 (제주공단딱징벌레)

*Carabus monilifer* Tatum, 1847, Ann. Mag. Nat. Hist. 20(130):15 (Eastern seas, in the Korean Archipelago).

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- Coptolabrus monilifer*: Kolbe, 1886, Arch. f. Nat. 52:237 (Insel Quelpart).  
*Carabus (Coptolabrus) smaragdinus tyrannus* Lapouge, 1911, Misc. Ent. 19(1): 2-4 (Ile Quelpart).  
*Carabus (Coptolabrus) smaragdinus major* (partim) + *C. (C.) tyrannus*: Hauser, 1921, Zool. Jahrb. 45. Abt. Syst.: 183-184, 230-234, pl. 5 (5) (Insel Quelpart).  
*Coptolabrus monilifer*: Okamoto, 1924, Bull. Agr. Exp. Stat. Gov. Gen. Chos. 1(2):161 (Quelpart Island).  
*Carabus (Coptolabrus) tyrannus*: Csiki, 1927, Col. Cat. 91:164 (Insel Quelpart).  
 "Saishuosamushi": Mori, 1982, Bunk. Chos. 38:59 (Is. Chejudo).  
*Coptolabrus (Coptolabrus) smaragdinus smaragdinus monilifer* + *C. (C.) s. s. tyrannus*: Lapouge, 1931, Gen. Ins. 192: 485 (Corée méridion, Ile Quelpart).  
*Carabus (Coptolabrus) Sect. Coptolabrus smaragdinus smaragdinus n. monilifer* + *C. (C.) Sect. C.) s. branickii n. pinganensis* (partim): Breuning, 1936, Best.-Tab. eur. Col. 110:1523 (Insel Quelpart).  
*Carabus (Coptolabrus) tyrannus*: Yano, 1941, Nipp. Koch. 4(1):17 <sup>①</sup>.  
*Carabus smaragdinus monilifer*: Cho, 1957, Hum. & Sci., Nat. Sci. Kor. Univ. 2:182 (Korea).  
*Carabus smaragdinus monilifer*: Cho, 1963a, Ibid. 6:201 (Quelpart Island).  
*Carabus smaragdinus monilifer* + *C. s. pinganensis* (partim): Cho, 1963b, Journ. Nat. Acad. Sci, Rep. Kor. Nat. Sci. Ser. 4:87-88 (Cheju-do).  
*Carabus smaragdinus monilifer*: Cult. & Inf. Min., 1968, Rep. Acad. Surv. Mt. Hanlasan:258 <sup>②</sup>.  
*Carabus smaragdinus monilifer*: Zool. Soc. Kor., 1968, Nom. An, Kor. 2: 98 (Korea).  
*Carabus smaragdinus* (partim): Cho, 1969, Ill. Encycl. Faun. & Flor. Kor. 10:134 (Is. Chejudo).  
*Coptolabrus monilifer*: Seok, 1970, Chej. Ch'ongs. 5:77 (Is. Chejudo).  
*Coptolabrus smaragdinus monilifer*: Lee, 1977, Kor. Journ. Ent. 7(2):39 <sup>③-④</sup>.  
*Damaster smaragdinus monilifer*: Nakane, 1977b, Bull. Nat. Sci., Mus. Ser. A(Zool.). 3(4): 242 <sup>⑤-⑥</sup>.  
*Coptolabrus smaragdinus* (partim.): Kim, 1978, Distr. Atl. Ins. Kor. 2:22, pl. 6 (CA 07) <sup>⑦-⑩</sup>.  
*Damaster (Coptolabrus) smaragdinus*: Sakaguti, 1981, Ins. World. 5:34, pl. 9 (4) (Is. Chejudo).

**Type-Locality:** Korea (Is. Chejudo).

**Description:** Dorsum much dark coppery, sometimes bearing dark greenish coppery or dark reddish coppery luster.

Pronotum with lateral margins somewhat gradually raised and slightly more extending sub-angulately mesally than in other subspecies.

Elytra with mucrones very short to rudimental, not sharply pointed. Thoracic episterna and lateral parts of venter with punctures strongly prominent.

Male aedeagus with shaft somewhat slightly slenderer than those of other subspecies; endophallus with an aggonoporial lobe longer than wide.

**Length:** Male 33-35mm, female 35-41mm.

**Locality:** JJ : Mt. Hallasan <sup>⑦</sup> (=Mt. Hal-La <sup>③</sup>, Mt. Hanlasan <sup>②</sup>, Mt. Hanna <sup>⑤</sup>), Hawŏn (=Ha-Weon <sup>④</sup>), Kŭmnyŏngsagul (=Kinneikutsu <sup>⑥</sup>), Kwanŭmsa Temple <sup>⑨</sup>, Sanch'ŏndan <sup>⑩</sup>, Sŏgwip'o (=Seikiho <sup>①</sup>), Yŏngsil <sup>⑧</sup>.

**Distribution:** Korea (Is. Chejudo).

36-2. *Damaster (Coptolabrus) smaragdinus fulminifer* (Roeschke, 1916)

산홍단딱정벌레 (만주홍단딱정벌레, 북방홍단딱정벌레, 청단딱정벌레)

- Coptolabrus longipennis* (partim): Kraatz, 1879, Deutsch. Ent. Zeitschr. 23(1):172 (Korea).  
*Coptolabrus longipennis* (nec Chaudoir): Kolbe, 1886, Arch. f. Nat. 52:236 (Korea).  
*Coptolabrus longipennis* (nec Chaudoir): Heyden, 1887, Hor. Soc. Ent. Ross. 21:246 (Korea).  
*Coptolabrus smaragdinus*: Bates, 1888, Proc. Zool. Soc. Lond.: 368-369 (Korea).  
*Coptolabrus pyrophorus* (partim): Reitter, 1895, Wien. Ent. Zeit. 14(4): 104-105 (Korea).  
*Coptolabrus branickii* (partim): Semenov, 1898a, Hor. Soc. Ent. Ross. 31:324<sup>①</sup>.  
*Carabus* (*Coptolabrus*) *fulminifer* Roeschke, 1916, Soc. Ent.:127<sup>②</sup>.  
*Carabus* (*Coptolabrus*) *smaragdinus coreicus* + *C. (C.) s. pinganensis* + *C. (C.) fulminifer*:<sup>①,③-⑤</sup>  
 Hauser, 1921, Zool. Jahrb. 45. Abt. Syst.: 216-218, 220-221, 224-230, pls. 3(7), 4(5)  
*Coptolabrus planus* Born, 1922, Ent. Mitt. 11(4):168-169 (Korea).  
*Coptolabrus Laffosei* (nec Feisthmel) + *C. Smaragdinus*: Kano, 1923, Ins. World. 27(315):  
 379<sup>⑥-⑧</sup>.  
*Coptolabrus Laffosei* (nec Feisthmel) + *C. longipennis* (nec Chaudoir) + *C. smaragdinus*:  
 Kano, 1924, Ibid. 28(326):348-349 (Korea).  
*Carabus* (*Coptolabrus*) *fulminifer* + *C. (C.) Oudoti pinganensis* + *C. (C.) smaragdinus* var.  
*coreicus*: Csiki, 1927, Col. Cat. 91:155, 164<sup>①,⑨</sup>.  
*Carabus* (*Coptolabrus*) *fulminifer*: Breuning, 1928, Col. Centr. 2(5, 6):254<sup>①</sup>.  
*Coptolabrus* (*Coptolabrus*) *smaragdinus smaragdinus fulminifer* + *C. (C.) s. branickii* (partim):  
 Lapouge, 1931, Gen. Ins. 192:484-485<sup>①</sup>.  
*Coptolabrus smaragdinus* var. *antungensis* (nec Hauser): Cho, 1934, Journ. Chos. Nat. Hist.  
 Soc. 17:87<sup>⑩</sup>.  
*Coptelabrus smaragdinus* (sic): Mochizuki, 1935, Rinsei. 2(4):33<sup>①</sup>.  
*Carabus* (*Coptolabrus* Sect. *Coptolabrus*) *smaragdinus smaragdinus* n. *mandschuricus* (partim)  
 + *C. (C.S.C.) s. s. n. longipennis* (partim) + *C. (C. S. C.) s. branickii* n. *pinganensis* (partim)  
 + *C. (C. S. C.) s. b. n. fulminifer*: Breuning, 1936, Best.-Tab. eur. Col. 110:1518-1524<sup>④,⑫-⑭</sup>.  
*Carabus jankowskii* (nec Oberthur) + *C. fulminifer*: Hirayama, 1940, Col. Ill. Col.: 83, pl.30  
 (3, 5)<sup>⑦, ⑮</sup>.  
*Carabus* (*Coptolabrus*) *branicki* (sic et nec Taczanowski) + *C. (C.) elysii* (partim) + *C. (C.)*  
*fulminifer* + *C. (C.) oudoti* (partim) + *C. (C.) o. pinganensis* + *C. (C.) smaragdinus coreicus*  
 + *C. (C.) monilifer* (nec Tatum): Yano, 1941, Nipp. Koch. 4(1):16-17<sup>①,⑨,⑫-⑯</sup>.  
*Coptolabrus branickii* (nec Taczanowski): Cho, 1947, Bull. Zool. Sect. Nat. Sci. Mus. 2(3):70<sup>⑰</sup>.  
*Carabus smaragdinus longipennis* (nec Chaudoir) + *C. s. pinganensis* + *C. s. fulminifer* + *C. s.*  
*coreicus*: Cho, 1957, Hum. & Sci., Nat. Sci. Kor. Univ. 2:183 (Korea).  
*Carabus smaragdinus manchuricus* (sic et nec Semenow) + *C. s. longipennis* (nec Chaudoir) +  
*C.s. pinganensis* (partim) + *C. s. fulminifer* (partim): Cho, 1963b, Journ. Nat. Acad. Sci.  
 Rep. Kor. Nat. Sci. Ser. 4:87-88<sup>⑳-㉓</sup>.  
*Carabus smaragdinus longipennis* (nec Chaudoir) + *C. s. manchuricus* (sic et nec Semenow) +  
*C. s. pinganensis* + *C. s. fulminifer*: Zool. Soc. Kor., 1968, Nom. An. Kor. 2:98 (Korea).  
*Carabus smaragdinus* (partim): Cho, 1969, Ill. Encycl. Faun. & Flor. Kor. 10:134, pl.5 (25b)  
 (N. Korea).  
*Coptolabrus smaragdinus fuiminifer*: Tamanuki, 1970, Beaut. Beetl. World.: 25-28 (Korea).  
*Carabus smaragdinus*: Kim et Kim, 1971, Rep. Kor. Ass. Cons. Nat. 4:154<sup>㉔</sup>.  
*Coptolabrus smaragdinus fulminifer* + *C. s. branickii* (partim): Lee, 1977, Kor. Journ. Ent.  
 7 (2):40<sup>㉕-㉖</sup>.<sup>⑩,⑪,⑬,⑳,㉗-㉙</sup>  
*Coptolabrus smaragdinus* (partim): Kim, 1978, Distr. Atl. Ins. Kor. 2:22, pl. 6 (CA 07)  
*Carabus smaragdinus pinganensis*: Mandl. 1979, Kol Rundsch. 54:54<sup>㉙</sup>.  
*Damaster* (*Coptolabrus*) *smaragdinus fulminifer*: Yasuda et Okajima, 1980, Beetl. World.:18,  
 138 (Northern Korea).  
*Damaster* (*Coptolabrus*) *smaragdinus*: Sakaguti, 1981, Ins. World. 5:34, pl. 9 (1,2) (Korea).

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Type-locality: Korea (Wonsan: HN).

Description: Dorsum strongly glossy, bearing greenish coppery, greenish golden coppery, or reddish golden coppery luster.

Elytra with mucrones usually sharply pointed; primary callosities moderate in size, and usually convex; grounds somewhat network-like, coarsely and roughly sculptured, strongly glossy.

Male endophallus with an aggonoporial lobe about as long as wide, more or less deep roundly terminated.

Length: Male 33-38mm, female 36-45mm.

Locality: GB : Mt. Sobaeksan (=Mt. So-Baeg<sup>⑬</sup>).

GG : Mt. Yongmunsan.

GW : Hongch'on<sup>⑮</sup>, Mt. Kūmgangsan<sup>⑰</sup> (=Mt. Diamond<sup>⑳</sup>, Mt. Geum-Gang<sup>㉑</sup>, Kumkang-san<sup>㉒</sup>, Utikongo<sup>㉓</sup>), Naksansa Temple<sup>㉔</sup>, Mt. Odaesan<sup>㉕</sup> (=Mt. O-Dae<sup>㉖</sup>, Otae-san<sup>㉗</sup>), Mt. Pangdaesan (=Mt. Bang-Dae<sup>㉘</sup>), P'yōnggang (=Pingan<sup>㉙</sup>, Pingan bei Gensan<sup>㉚</sup>), Mt. Sogūmgang<sup>㉛</sup> (=So-Geum-Gang<sup>㉜</sup>), Mt. Sōlaksan<sup>㉝</sup> (=Mt. Seol-Ag<sup>㉞</sup>), Mt. T'aebaeksan (=Mt. Tae-Baeg<sup>㉟</sup>), Mt. Tut'asan.

HB : Ch'ōngjin (=Chungzin<sup>㊱</sup>, Seishien<sup>㊲</sup>, Seishin<sup>㊳</sup>), Chuūl (=Shuotsu<sup>㊴</sup>), Hoeryōng<sup>㊵</sup> (=Hoeryung<sup>㊶</sup>, Hoirjong<sup>㊷</sup>, Kainei<sup>㊸</sup>), Mt. Kwanmobong<sup>㊹</sup> (=Mt. Gwan-Mo-Bong<sup>㊺</sup>, Kwanmo-san<sup>㊻</sup>), Myōngch'ōn<sup>㊼</sup> (=Myungchun<sup>㊽</sup>), Mt. Paektusan<sup>㊾</sup> (=Paiktu-san<sup>㊿</sup>, Yek-chan<sup>㊿</sup>), Puryōng (=Pu Ryōng<sup>㊿</sup>, Pu-Ryōng<sup>㊿</sup>).

HH : Yulli Myōn (=Ulrimyun<sup>㊿</sup>, Yulli<sup>㊿</sup>).

HN : Anbyōn (=Anbyun<sup>㊿</sup>), Han'gu<sup>㊿</sup>, Hyesanjin (=Hesanjin<sup>㊿</sup>, Hesanjin<sup>㊿</sup>), Pujōn'gowōn<sup>㊿</sup>, Sambanghyōp (=Sanboukyo<sup>㊿</sup>), Samho<sup>㊿</sup>, Sōgwangsa (=Shakuoji<sup>㊿</sup>), Unsuryōng (=Unsu-ryung<sup>㊿</sup>), Wōnsan<sup>㊿</sup> (=Gensan<sup>㊿</sup>, Umgegend von Gensan<sup>㊿</sup>, Umgebung von Gensan<sup>㊿</sup>, Wonsan<sup>㊿</sup>).

PB : Huch'ang<sup>㊿</sup> (=Fuchang<sup>㊿</sup>, Kousho<sup>㊿</sup>), Mt. Myohyangsan.

PN : P'yōngyang<sup>㊿</sup> (=Pyungyang<sup>㊿</sup>), Taedonggun<sup>㊿</sup>.

Distribution: Korea (Northern to central eastern part).

36-3. *Damaster (Coptolabrus) smaragdinus sangjaei* Kwon et Lee, subsp. nov.

상재홍단막정벌레

*Carabus smaragdinus pinganensis* (nec Hauser, partim): Cho, 1963b, Journ. Nat. Acad. Sci.

Rep. Kor. Nat. Sci. Ser. 4:88<sup>①</sup>.

*Carabus smaragdinus* (partim): Kim, 1978, Distr. Atl. Ins. Kor. 2:22, p16 (CA 07)<sup>②</sup>.

Description: Dorsum with entirely bright greenish to greenish blue coppery luster.

Elytra with mucrones usually sharply pointed; intervals strongly raised; primary callosities ovoid, moderate in size; grounds somewhat network-like, markedly coarse and roughly sculptured.

Thoracic episterna and lateral parts of venter with punctures strongly prominent. Male endophallus with an aggonoporial lobe longer than wide, gradually narrowed and roundly terminated apically.

Length: Male 33-37mm, female 36-43mm.

Type-examined: Holotype male, Mt. Chirisan, GN, S. Korea, 6, VI, 1983, coll. Y. J. Kwon; paratypes: 2 females, same data as holotype; 2 females, 13, VII, 1981; 2 females, 20, VII, 1981; 4 males, 12, VI, 1983, all the same locality and collector.

Locality: GN : Mt. Chirisan<sup>②</sup>(=Mt. Chii-san<sup>①</sup>).

Remark: This new subspecies may be easily separated from other races by the outstanding external coloration and the elytral sculpture.

36-4. *Damaster (Coptolabrus) smaragdinus hongdoensis* Kwon et Lee, subsp. nov.    홍도홍단딱정벌레

Description: Dorsum reddish golden coppery, with elytra somewhat darker.

Elytra with mucrones sharply pointed; primary callosities strikingly large, often elongate oval and flat; outermost secondaries somewhat prominent except basal and apical parts; the space between primary and secondary intervals apparently narrower than secondary callosities, strong roughly sculptured. Proepisterna weakly punctulate.

Male endophallus with an aggonoporial lobe longer than wide.

Length: Male 39mm.

Type-examined: Holotype male, Is. Hongdo, JN, S. Korea, 10, VIII, 1981, coll. Y.J. Kwon.

Remark: The present new subspecies is easily separated from other races by the shape of primary callosities on elytra.

36-5. *Damaster (Coptolabrus) smaragdinus hoenggandoensis* Kwon et Lee, subsp. nov.    추자홍단딱정벌레

*Carabus procerulus* (nec Chaudoir): Kim et al., 1969, Rep. Biot. Chuj. Iss.: 62<sup>①</sup>.

*Carabus jankowskii* (nec Oberthür): Choi, 1969, Ibid.: 128<sup>②</sup>.

*Coptolabrus smaragdinus branickii* (partim): Lee, 1977, Kor. Journ. Ent. 7(2):40<sup>③</sup>.

Description: Dorsum mostly dark reddish coppery. Elytra with mucrones sharply pointed; primary callosities moderate or slightly smaller in size, and convex; the space between primary and secondary intervals usually wider than secondary callosities; grounds less roughly sculptured.

Proepisterna rather moderately punctured. Male endophallus with an aggonoporial lobe longer than wide, deep roundly terminated.

Female apophysis with vertical plate bearing anterior process well developed; inner plate markedly elongate, much narrower than those of other races.

Length: Male 37mm, female 37.5mm.

Type-examined: Holotype male, Is. Hoenggando, in Iss. Ch'ujagundo, JJ, S. Korea, 4, VIII, 1970, coll. S.M. Lee; paratype: 1 female, same data as holotype.

Locality: JJ : Is. Hoenggando<sup>②</sup>(=Chuja Islands<sup>①</sup>, Is. Hoeng-Gan-Do<sup>③</sup>).

Remark: The above new race may be separated from other related subspecies by the structure of female vertical plate of vaginal apophysis.

36-6. *Damaster (Coptolabrus) smaragdinus branickii* (Taczanowski, 1888)    진홍단딱정벌레

*Carabus (Coptolabrus) Branickii* Taczanowski, 1888, Hor. Soc. Ent. Ross. 22:187, pl. 11(8)<sup>①</sup>.

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- Coptolabrus Branicki* (sic): Kraatz, 1889, Deutsch. Ent. Zeitschr. 33(2): 323-324 <sup>②</sup>.  
*Coptolabrus branickii* (partim): Semenow, 1898a, Hor. Soc. Ent. Ross. 31:324 <sup>③</sup>.  
*Coptolabrus Oudoti* Hauser, 1913, Deutsch. Ent. Zeitschr. 47:560-561 <sup>④</sup>.  
*Carabus (Coptolabrus) oudoti* + *C. (C.) branickii*: Hauser, 1921, Zool. Jahrb. 45. Abt. Syst.: 218-224, pls. 1 (10, 11), 5(3,4) <sup>④-⑤</sup>.  
*Carabus (Coptolabrus) Branickii* + *C. (C.) Horvathi* + *C. (C.) Oudoti*: Csiki, 1927, Col. Cat. 91:154 <sup>⑥-⑦</sup>.  
*Carabus (Coptolabrus) Branicki* (sic): Breuning, 1928, Col. Centr. 2(5, 6):254 <sup>⑤ ⑧</sup>.  
*Coptolabrus (Coptolabrus) smaragdinus branickii* var. *oudoti*: Lapouge, 1931, Gen. Ins. 192:485 <sup>④</sup>.  
*Carabus (Coptolabrus) oudoti*: Matsumura, 1931, 6000 Ill. Ins. Jap.: 108 (Korea).  
*Carabus branickii*: Haku, 1936, Journ. Chos. Nat. Hist. Soc. 21:120 <sup>⑨</sup>.  
*Carabus (Coptolabrus) Sect. Coptolabrus smaragdinus branickii* n. *branickii*: Breuning, 1936, Best.-Tab. eur. Col. 110:1524-1525 <sup>④, ⑧, ⑩-⑪</sup>.  
*Coptolabrus oudoti* + *C. smaragdinus* var. *antungensis* (nec Hauser): Mochizuki et Tsunekawa, 1937, Journ. Chos. Nat. Hist. Soc. 22:76 <sup>⑫-⑬</sup>.  
*Carabus oudoti*: Narita, 1939, Sci. Rep. Keit. 4:44 <sup>⑭</sup>.  
*Coptolabrus oudoti*: Mochizuki et Masui, 1939, Ibid. 4:53 <sup>⑮</sup>.  
*Coptolabrus oudoti* (sic) + *C. smaragdinus* (sic): Ishii, 1940, Ibid. 5:46 <sup>⑬, ⑮-⑯</sup>.  
*Coptolabrus oudoti*: Ohane et al., 1941, Ibid. 6:21 (Korea).  
*Carabus (Coptolabrus) elysii* (nec Thomson) + *C. (C.) oudoti* (partim): Yano, 1941, Nipp. Koch. 4(1):16-17 <sup>⑰-⑱</sup>.  
*Carabus smaragdinus branicki* (sic): Cho, 1957, Hum. & Sci., Nat. Sci. Kor. Univ. 2:183 (Korea).  
*Carabus gehini* (nec Fairmaire): Kim, 1958, Journ. Appl. Zool. Kor. 1(1):90 <sup>⑲</sup>.  
*Carabus smaragdinus pinganensis* (nec Hauser, partim) + *C. s. fulminifer* (nec Roeschke, partim) + *C. s. branickii* (partim): Cho, 1963b, Journ. Nat. Acad. Sci. Rep. Kor. Nat. Sci. Ser. 4:88 <sup>⑤, ⑪, ⑳-㉓</sup>.  
*Carabus smaragdinus branicki* (sic): Zool. Soc. Kor., 1968, Nom. An. Kor. 2:98 (Korea).  
*Carabus smaragdinus* (partim): Cho, 1969, Ill. Encycl. Faun. & Flor. Kor. 10:25, pl.5 (25a) (C. & S. Korea).  
*Carabus smaragdinus*: Kim et Kim, 1972, Rep. Kor. Ass. Cons. Nat. 5:76 <sup>㉔</sup>.  
*Coptolabrus smaragdinus branickii* (partim): Lee, 1977, Kor. Journ. Ent. 7(2):39-40 <sup>㉕-㉖</sup>.  
*Coptolabrus smaragdinus*: Kim et Nam, 1977, Rep. Kor. Ass. Cons. Nat. 11:130 <sup>㉗</sup>.  
*Coptolabrus smaragdinus* (partim): Kim, 1978, Distr. Atl. Ins. Kor. 2:22, pl.6(CA 07) <sup>㉘, ㉙, ㉚, ㉛, ㉜ - ㉞</sup>.  
*Coptolabrus smaragdinus branickii*: Yoon et Nam, 1979, Rep. Kor. Ass. Cons. Nat. 17:144. <sup>㉟-㊱</sup>.  
*Coptolabrus smaragdinus branickii*: Yoon et Nam, 1980, Bas. Plan Constr. Nat. Stud. Kyongg. Prov.:38 <sup>㊲</sup>.  
*Damaster (Coptolabrus) smaragdinus branicki* (sic): Yasuda et Okajima, 1980, Beetl. World.: 18, 138 (Southern Korea).  
*Damaster (Coptolabrus) smaragdinus* + *D. (C.) s. oudoti*: Sakaguti, 1981, Ins. World. 5:34, 36, P1.9(3) (Prov. Kyönggido).  
*Carabus smaragdinus*: Kim et Chang, 1982, Gen. Rep. Nat. Cond. 1:144 <sup>㊳</sup>.

Type-locality: Korea (Seoul: GG).

Description: Dorsum usually bearing with reddish coppery, reddish golden coppery, or darker luster, but generally less glossy than in subsp. *fulminifer*.

Elytra with mucrones usually sharply pointed; primary callosities moderate in size, and usually convex; grounds coarsely and roughly sculptured, sometimes slightly network-like; moderately glossy.

Male endophallus with an aggonoporial lobe apparently longer than wide, but the ratio is somewhat variable.

Length: Male 31-38mm, female 35-44mm.

- Locality: CB : Hwanggan<sup>55</sup>, Koesan<sup>73</sup>, Okch'ŏn<sup>74</sup>, Mt. Songnisan<sup>13</sup> (=Mt. Sog-Ni<sup>44</sup>)  
Yŏngdong<sup>72</sup>.
- CN : Mt. Ch'ilgapsan (=Mt. Chilgab<sup>61</sup>), Hongsŏng<sup>75</sup> (=Hongsung<sup>28</sup>), Mt.  
Kyeryongsan<sup>77</sup> (=Mt. Ge-Ryong<sup>45</sup>, Mt. Gyeryong<sup>92</sup>), Sŏsan<sup>76</sup> (=Susan<sup>21</sup>).
- GB : Ch'ilgok, Mt. Chuhŭlsan, Mt. Hwanghaksan, Mt. Kumosan, Mt. P'algongsan,  
Mt. Pisŭlsan (Yongyonsa Temple<sup>90</sup>), Taegu (Taiku<sup>11</sup>), Mt. T'ohamsan,  
Mt. Unmunsan.
- GG : Mt. Aengmubong (=Mt. Aeng-Mu-Bong, <sup>38</sup> Pogwangsa<sup>38</sup>), Mt. Ch'ŏnggyesan<sup>59</sup>,  
Mt. Ch'onmasan<sup>5</sup> (=Mt. Cheon-Ma<sup>40</sup>), Idong<sup>67</sup>, Inch'ŏn<sup>57</sup> (=Chemulpo<sup>4</sup>,  
Inchun<sup>20</sup>, Tshemulpo<sup>7</sup>), Kaesŏng<sup>70</sup> (=Kaesung<sup>90</sup>), Konjiam (=Kon-Ji-Am<sup>42</sup>),  
Mt. Kwanaksan<sup>50</sup>, Kwangnŭng<sup>55</sup> (=Gwang-Neung<sup>29</sup>, Kwangnung<sup>29</sup>), Mt.  
Myŏngjisan<sup>53</sup> (=Mt. Myeong-Ji<sup>55</sup>), P'och'ŏn<sup>56</sup>, Mt. Pogaesan<sup>12</sup>, Mt.  
Pukhansan (=Mt. Bug-Han<sup>43</sup>), P'yŏngt'aek<sup>60</sup> (=Pyungtaek<sup>24</sup>), Samjudan<sup>25</sup>,  
Seoul<sup>5</sup> (=Ch'ŏngyangni<sup>61</sup>, Keijo<sup>17</sup>, Mt. Namsan<sup>15</sup>, Nokpŏlli<sup>62</sup>, Environs  
de S  oul<sup>1</sup>, S  oul<sup>2</sup>, Seul<sup>3</sup>, Soeul<sup>6</sup>, Teoul<sup>10</sup>, Uidong<sup>64</sup> Y  uido<sup>13</sup>),  
Sih  ng<sup>71</sup> (=Shihung<sup>26</sup>), S  p'ori<sup>63</sup>, Mt. Soyosan (=Mt. Shoyo<sup>14</sup>), Mt.  
Tobongsan<sup>58</sup> (=Mt. Do-Bong<sup>41</sup>), Mt. T  gamsan (=Mt. Deog-Am<sup>37</sup>), Iss.  
T  kch  kkundo (=Dukchok Iss<sup>18</sup>, Is. Seonmi<sup>54</sup>), Mt. Wangbangsan (=Mt. Wang-  
Bang<sup>36</sup>), Yangp'y  ng (=Yangpyung<sup>43</sup>), Is. Y  ngjongdo<sup>5</sup>.
- GN : Haman<sup>12</sup>, Hamyang<sup>62</sup>, Is. Kad  kto<sup>60</sup>, Mt. Kayasan<sup>79</sup> (=Mt. Kaya-san<sup>41</sup>),  
Is. K  jedo<sup>64</sup> (=Is. Geo-Je-Do<sup>47</sup>), Mt. K  mj  ngsan (=Mt. Geum-Jeong<sup>48</sup>),  
Masan<sup>8</sup>, Milyang<sup>63</sup>, Mt. Muhaksan, Is. Namhaedo (=Mt. Geum-San<sup>46</sup>),  
Pusan<sup>31</sup> (=Fusan<sup>19</sup>), Sanin My  n, Mt. Sinbulsan, Mt. Y  ngch'wisan.
- GW : Mt. Ch'iaksan.
- HH : Haeju<sup>54</sup>, Ongjin<sup>53</sup>.
- JB : Koch'ang (=Go-Chang<sup>50</sup>), Mt. Naejangsan (=Mt. Nae-jang<sup>9</sup>), sunch'ang<sup>66</sup>  
(=Sunchang<sup>27</sup>), Mt. T  gyusan<sup>67</sup> (=Muju Gucheondong<sup>44</sup>, Muju  
Kuch'  ndong<sup>55</sup>).
- JN : Changh  ng<sup>50</sup> (=Changhung<sup>22</sup>), Is. Chindo (=Zindo<sup>23</sup>), Mt. Chogyesan (=Mt.  
Jogyesan<sup>52</sup>, Songgwangsa<sup>58</sup>), Is. Ch'uja Y  pto<sup>65</sup>, Mt. Turyunsan, Is. Wando, Mt.  
Yudalsan (=Mt. Yu-Dal<sup>61</sup>).

Distribution: Korea (Central western to southern part).

Remark: In the present sense, this subspecies comprises more wide southern populations of Korean Peninsula and some of its adjacent islands provisionally, but it will be inevitable to split it into several local races according to the further exploration which may be brought about the sufficient material for this group in feature.

(Tribe II. Cychrini Lacordaire, 1854)

꼭지막정벌레 족

Diagnosis: Body generally very small to medium sized. Coloring polished black or mat.

Head strikingly narrow and slender. Mandibles very long and narrow, gradually tapering to

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apices, with dorsal surface smooth, often toothed distally. Labrum generally narrow, with anterior margin deeply cleft. Labrum usually without median tooth, but simply emarginate on mentum anteriorly; labial palpi with penultimate segments multisetose. Apical segments of maxillary and labial palpi short subtriangular, broadly grooved longitudinally on dorsal surface, much larger in male than those of female. Gular setae usually absent. Eyes prominent, less bulging from head. Neck somewhat elongate.

Antennal segments simply slender, more or less cylindrical, without ventral hairless areas in male.

Pronotum usually arcuately narrowed posteriorly at either lateral side, usually monosetose laterally; hind angles usually not developed, or rarely subacutely produced. Prosternal process somewhat short, with apex turned upward.

Elytra comparatively broad to fore body, ovate, with epipleura strikingly wide and well developed, mostly enveloping hind body; sculpture homodyname or heterodyname; mucrones always absent. Hind wings strikingly atrophied.

Fore tarsi in both sexes nearly equal sized. Abdomen with transverse sulci entirely absent or obscure.

Male aedeagus with a ligula entirely absent; endophallus lacking copulatory piece. Parameres with end piece very short.

Female genitalia with bursa copulatrix well developed. Vaginal apophysis with inner plate very narrow.

Genus 14. *Cychrus* Fabricius, 1794      복지박정벌레 속

*Cychrus* Fabricius, 1794, Ent. Syst. em. & auct. 4:440.

Type-species: *Carabus attenuatus* Fabricius, 1792

Type-locality: Europe.

**Diagnosis:** Body generally very small to small sized. Coloring polished black or dark brown, generally lacking any prominent metallic luster.

Head strikingly narrow and somewhat cylindrical; frontal impressions very weak to strikingly deep, short or sometimes reaching anterior margins of eyes; vertex rather gently convex anteriorly or deeply concave between eyes, with punctures fine to strikingly deep prominent or rugulose. Mandibles very long and narrow, gradually tapering and bent at apices which are sharply pointed, with 2 distal teeth at either incisor margin; dorsal surface usually smooth, often with sparse micro-punctures. Labrum comparatively large, with anterior margin U-likely deeply cleft mesally. Maxillary palpi with apical segments greatly extending distally and broadly grooved longitudinally on dorsal surface, usually longer than penultimate segments. Labium generally without setae on mentum; median tooth entirely lacking, only simply emarginate anteriorly; labial palpi with apical segments greatly extending distally and broadly grooved longitudinally on dorsal surface; penultimate segments generally multisetose; submentum flat, always lacking gular setae.

Antennae moderately slender, with 2nd segments usually exceeding half as long as 3rd segments; hairy segments simple in both sexes.

Pronotum usually monosetose on either side: anterior margins usually not defined; lateral margins roundly extending anteriorly, arcuately contracted posteriorly or strongly sinuate before hind angles; hind angles not developed or angulate; basal foveae often transversely connected each other.

Elytra ovoid, comparatively broad to fore body, with epipleura strikingly wide, mostly enveloping hind body; sculpture homodyname or triploid heterodyname; primary intervals, if present, forming a series of tubercles; lateral margins strikingly narrow, preapical emarginations and humeral serrations entirely absent. Hind wings strikingly atrophied.

Fore tarsi simple in both sexes, not dilated. Hind coxae generally monosetose; both anterior and postero-proximal setae always absent. Hind trochanters smooth, without any setiferous pore on ventral surface. Abdomen with transverse sulci entirely absent or rudimental.

Male aedeagus roundly curved, tapering apically; ostium simple, not lobate, markedly extending to base of shaft. Endophallus lacking ligula and copulatory piece.

Female genitalia with bursa copulatrix well developed. Vaginal apophysis with inner plate very narrow.

37. *Cychrus coreicus* Breuning, 1950      꼭지딱정벌레

*Cychrus koltzai* (sic et nec Roeschke): Yano, 1941, Nipp. Koch. 4(1):20<sup>①</sup>.

*Cychrus coreicus* Breuning, 1950, Ent. Arb. Mus. G. Frey. 1:201<sup>①</sup>.

Type-locality: Korea (Mt. Mayisan: HB).

Description: General coloration polished black, without any prominent metallic luster.

Head narrow, slightly cylindrical; frontal impressions strikingly deep prominent, reaching anterior margins of eyes; vertex slightly convex anteriorly, deeply concave between eyes, with punctures deep prominent and comparatively dense. Mandibles with dorsal surface smooth, sparsely micropunctulate. Labrum comparatively large, slightly shorter than wide, with anterior margin deeply cleft. Eyes relatively large, but less protruding laterally. Maxillary palpi slender, with apical segments greatly extending distally and broadly grooved longitudinally on dorsal surface, apparently longer than penultimate segments. Labium with mentum entirely lacking median tooth, but simple deeply emarginate mesally at anterior margin, with lateral lobes well producing anteriorly; labial palpi slender, with apical segments greatly extending distally and broadly grooved longitudinally on dorsal surface, apparently shorter than penultimate segments which are slender.

Antennae slender, but not reaching middle of elytra; hairy segments simple in both sexes, without ventral hairless areas.

Pronotum rather flat mesally, about as long as wide or very slightly shorter, monosetose on each side, lacking posterior marginal seta; anterior margin very obscurely extending mesally, not sharply defined; lateral margins very narrowly defined, gently roundly extending before middle, gradually contracted posteriorly and strongly sinuate before hind angles; hind angles rather angulate and prominent, declined downwards; basal foveae transversely connected and impressed next to posterior margins; punctures deep prominent, rugulose; median line weakly carved.

Elytra ovoid, strikingly elevated and rather flat mesally, abrupt roundly curved laterally; sculpture triploid heterodyname; primary intervals composed of a series of ovoid tubercles; secondaries and tertiaries apparently less costate, the latter often lower than the former, much frequently interrupted or tuberculate, somewhat irregular posteriorly; lateral margins very narrow, lacking umbilicate series; epipleura strong rugosely punctate. Thoracic sterna deeply punctulate.

Chaetotaxy of hind coxae monosetose, only having a posterior seta. Abdomen lacking transverse sulci.

Length: Appr. 9-11mm.

Locality: HB : Mt. Mayisan (=Mt. baji<sup>①</sup>).

Distribution: Korea (Northeastern part).

LIST OF ABROAD SPECIES EXAMINED FOR  
THE COMPARATIVE MORPHOLOGY

*Calosoma maximowicz* (Morawitz, 1863)

Shiruiuchi River, Oshima, Hokkaido, Japan, 1 male, 1 female, 31, VII, 1970.

*Campalita chinense* (Kirby, 1818)

Kamishihoro, Tokachi, Hokkaido, Japan, 1 male, 23, VII, 1970; Aigawa River, Ibaraki City, Osaka Pref., Honshu, Japan, 2 males, 30, VIII, 1966; Ippongi, Saitama Pref., Honshu, Japan, 2 males, ?, VI, 1968; Kizoro, Saitama Pref., Honshu, Japan, 2 males, ?, VI-VII, 1968; Futamatagawa, Yokohama Pref., Honshu, Japan, 1 male, 8, IX, 1969.

*Ceroglossus chilensis malleoanus* Lapouge, 1928

Victoria, Chile, 1 female, ?, XI, 1967.

*Apotomopterus (Apotomopterus) sauteri* (Roeschke, 1912)

Tengchih, Kaoshunsien, Taiwan, China, 3 males, 4 females, ?, VIII, 1975.

*Apotomopterus (Linnocarabus) clathratus maacki* (Morawitz, 1862)

Harbin, Manchuria, China, 1 female, ?, VIII, 1937.

*Apotomopterus (Linnocarabus) clathratus aquatilis* (Bates, 1883)

Hakuryuko Lake, Yonezawa, Yamagata Pref., Honshu, Japan, 1 female, 10, III, 1962; Jyusanko Lake, Aomori Pref., Honshu, Japan, 1 female, 4-6, IX, 1971; Chikauchi, Miyako City, Iwate Pref., Honshu, Japan, 1 male, 30, VII, 1973.

*Apotomopterus (Euleptocarabus) porrecticollis porrecticollis* (Bates, 1883)

Mt. Sotoyama, Nikko, Tochigi Pref., Honshu, Japan, 1 male, 1 female, 3, XI, 1969.

*Apotomopterus (Euleptocarabus) porrecticollis kansaiensis* (Nakane, 1961)

Kameoka City, Kyoto Pref., Honshu, Japan, 1 male, 1 female, 15, I, 1966; 1 male, 5, XI, 1967, the same locality; Akina, Akagicho, Shimane Pref., Honshu, Japan, 1 male, 1 female, 9, XII, 1974.

*Carabus (Carabus) granulatus granulatus* Linnaeus, 1758

Kissingen, Unterfranken, Germany, 1 male, 2 females, 19, XI, 1975; 1 male, 3 females, 17, I, 1976; 1 male, 4 females, 1, III, 1976, all the same locality; Buchbach, Pottschach, Austria, 1 female, 5, V, 1976; Bohemia Pisek, Czechoslovakia, 1 male, ?, VI, 1965; Mor. Židlochovice, Czechoslovakia, 1 female, ?, VI, 1967.

*Carabus (Carabus) granulatus yezoensis* Bates, 1883

Kawayu, Kushiro, Hokkaido, Japan, 1 male, 1 female, 10, VII, 1969; Mt. Nisekoannupurizan, Shiribeshi, Hokkaido, Japan, 2 females, 3-7, VIII, 1970.

*Carabus (Carabus) granulatus telluris* Lewis, 1882

Jyusanko Lake, Aomori Pref., Honshu, Japan, 3 males, 3 females, 21, VIII, 1970; Fukushima City, Tsukioka, Niigata Pref., Honshu, Japan, 1 female, 1, III, 1971; 1 male, 31, III, 1971, the same locality.

*Carabus (Carabus) vanvolxemi* Putzeys, 1875

Mt. Chokai, Yamagata Pref., Honshu, Japan, 1 female, 25, VII, 1966; Senjyogahara, Nikko, Tochigi Pref., Honshu, Japan, 2 males, 3 females, 4, VIII, 1969; Kagosaka Pass, 1300m, Yamanashi Pref., 1 male, 1 female, 5, XI, 1970.

*Carabus (Eutelocarabus) arvensis germaniae* Lengerken, 1911

Gr. Wald, Hoffenheim, Germany, 2 males, 2 females, ?, VI, 1974.

*Carabus (Eutelocarabus) arvensis schrickelli* Dejean, 1826

Meurthe et Moselle, France, 1 female, 28, I, 1974; Guervenheim, Haut Rhin, France, 1 male, 3, II, 1975.

- Carabus (Eutelocarabus) conciliator hokkaidensis* Lapouge, 1924  
Aizankei, Mt. Daisetsuzan, Hokkaido, Japan, 1 male, 2-5, VII, 1970; 1 male, 12-15, VII, 1970, the same locality; Mt. Apoidake, Hidaka, Hokkaido, Japan, 2 males, 1 female, 5-9, VIII, 1970.
- Carabus (Eucarabus) ullrichi ullrichi* Germar, 1824  
Slov. Pipt., Osada, Czechoslovakia, 4 males, 1 females, ?, VIII, 1968.
- Carabus (Eucarabus) ullrichi sokolari* Born, 1904  
Schwarzau, Austria, 1 male, 12, VIII, 1975.
- Carabus (Ohomopterus) dehaanii dehaanii* Chaudoir, 1848  
Mt. Hieizan, Kyoto Pref., Honshu, Japan, 3 males, 2 females, 15, I, 1967.
- Carabus (Ohomopterus) dehaanii tosanus* Nakane et al., 1953  
Asizurimisaki, Khochi Pref., Shikoku, Japan, 1 male, 2 females, 3, I, 1971.
- Carabus (Ohomopterus) dehaanii strenus* Breuning, 1932  
Mt. Sobozan, Ohita Pref., Kyushu, Japan, 1 male, 1 female, 29, XII, 1969.
- Carabus (Ohomopterus) dehaanii ishizuchianus* (Nakane, 1953)  
Mt. Ishizuchi, Ehime Pref., Shikoku, Japan, 1 male, 1 female, 7, VIII, 1968.
- Carabus (Ohomopterus) insulicola insulicola* Chaudoir, 1869  
Asakawa, Hachiji City, Tokyo Pref., Honshu, Japan, 1 female, 25, XII, 1967; Kizoro, Saitama Pref., Honshu, Japan, 3 males, 2 females, ?, II, 1968; Tochigi, Tochigi Pref., Honshu, Japan, 1 female, ?, III, 1968; Sendai, Miyagi Pref., Honshu, Japan, 1 male, ?, V, 1968; Bodai, Tanzawa, Kanakawa Pref., Honshu, Japan, 2 males, 2 females, 9, XI, 1969; Misagi, Miura Pref., Honshu, Japan, 1 male, 1 female, 17, I, 1971; Ogi, Is. Sadogashima, Niigata Pref., Japan, 2 males, 2 females, 21, XI, 1971; Tozukaku, Yokohama City, Honshu, Japan, 1 female, 10, VIII, 1981.
- Carabus (Ohomopterus) insulicola nishikawai* (Ishikawa, 1966)  
Kanamarubata, Boso Peninsula, Ohita Pref., Honshu, Japan, 2 males, 1, I, 1969.
- Carabus (Ohomopterus) insulicola arrowianus* (Breuning, 1934)  
Mt. Ohyama, Aichi Pref., Honshu, Japan, 1 female, 3, III, 1968; Mt. Honguzan, Aichi Pref., Honshu, Japan, 1 male, 17, VI, 1968.
- Carabus (Ohomopterus) insulicola maiyasanus* Bates, 1873  
Yamanomachi, Kobe City, Honshu, Japan, 2 males, 1, III, 1970.
- Carabus (Ohomopterus) esakii* Csiki, 1927  
Okitsu., Shizuoka Pref., Honshu, Japan, 1 male, 1 female, 3, I, 1969; Izu Peninsula, Shizuoka Pref., Honshu, Japan, 2 males, 2 females, 20, XII, 1973.
- Carabus (Ohomopterus) uenoi* (Ishikawa, 1960)  
Mt. Katsurisan, Nara Pref., Honshu, Japan, 1 male, 1 female, 30, V-4, VI, 1975; Mt. Kongo-san, Osaka Pref., Honshu, Japan, 1 male, 1 female, 24, V-1, VI, 1977.
- Carabus (Ohomopterus) yaconinus yaconinus* Bates, 1873  
Minoo, Osaka Pref., Honshu, Japan, 1 female, ?, III, 1968; Mt. Hanataka, Shimane Pref., Honshu, Japan, 2 males, 2 females, 20-21, III, 1969.
- Carabus (Ohomopterus) yaconinus iwawakianus* (Nakane, 1953)  
Mt. Kasugayama, Nara Pref., Honshu, Japan, 4 males, 4 females, 24-31, VII, 1974; Mt. Iwakisan, Osaka pref., Honshu, Japan, 3 males, 1 female, 27-29, V, 1977.
- Carabus (Ohomopterus) japonicus japonicus* Motschulsky, 1857  
Mt. Sobozan, Ohita Pref., Kyushu, Japan, 2 males, 29, XII, 1969.
- Carabus (Ohomopterus) japonicus tsushimae* Breuning, 1932  
Mt. Mitake, Is. Tsushima, Nagasaki Pref., Japan, 2 males, 2 females, 27, III, 1972.
- Carabus (Ohomopterus) japonicus ikiensis* (Nakane, 1968)  
Gonoura, Is. Iki, Nagasaki Pref., Japan, 2 females, 30, IV, 1969; 1 male, 19, VII, 1970, the same locality.

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- Carabus (Ohomopterus) lewisianus lewisianus* Breuning, 1932  
Kagosaka Pass, 1300m, Yamanashi Pref., 1 male, 1 female, 5, XI, 1970; Bodai, Tanazawa, Kanakawa Pref., Honshu, Japan, 3 males, 3 females, 9, XI, 1969.
- Carabus (Ohomopterus) lewisianus awakazusanus* Ishikawa, 1981  
Mt. Tomisan, Chiba Pref., Honshu, Japan, 1 male, 1 female, 31, XII, 1968; 1 male, 1 female, 2, I, 1969, the same locality.
- Carabus (Ohomopterus) albrechti okumurai* (Ishikawa, 1966)  
Mt. Mitsutogeyama, Yamanashi Pref., Honshu, Japan, 1 male, 3 females, 2, VI, 1971.
- Carabus (Ohomopterus) albrechti freyi* Emden, 1932  
Ogi, Is. Sadogashima, Niigata Pref., Japan, 2 males, 2 females, 21, XI, 1971; Sendai, Miyagi Pref., Honshu, Japan, ?, VIII, 1968.
- Carabus (Ohomopterus) daisen okianus* (Nakane, 1961)  
Thogo, Is. Okinoshima, W. Honshu, Japan, 2 females, 5, IX, 1970.
- Carabus (Ohomopterus) yamato* (Nakane, 1953)  
Mt. Katsuragisan, Nara Pref., Honshu, Japan, 3 males, 3 females, 30, V-4, VI, 1975.
- Lipaster (Morphocarabus) monilis consitus* (Panzer, 1796)  
Muhlhouse, France, 5 males, 5 females, 20, IV, 1976; Le Châtelier, Jura, Switzerland, 1 male, ?, VII, 1975.
- Lipaster (Morphocarabus) scheidleri scheidleri* (Panzer, 1799)  
Bavaria Inferior, Griesbach, Germany, 1 male, 1 female, 2, VIII, 1975.
- Lipaster (Morphocarabus) hummeli tristiculus* (Kraatz, 1878)  
Khingan, Manchuria, China, 1 male, 20, VII, 1933.
- Ischnocarabus (Aptocarabus) rossii* (Dejean, 1826)  
Monte Carnevale, 750m, Marradi, Italy, 1 female, 5, X, 1969.
- Ischnocarabus (Archicarabus) monticola monticola* (Dejean, 1826)  
Col de la Covillote, 1500m, France, 1 male, 19, VI, 1974.
- Ischnocarabus (Archicarabus) monticola roccae* (Born, 1924)  
Savona, Piemonte, Italy, 2 males, 2 females, 4, XI, 1976.
- Ischnocarabus (Archicarabus) nemoralis nemoralis* (Müller, 1764)  
Kissingen, Unterfranken, Germany, 2 females, 13, VI, 1976; 2 females, 12, IX, 1976, the same locality; Forst 550m, Bern, Switzerland, 1 male, 1 female, 27, VIII, 1973; Bohemia Pisek, Czechoslovakia, 3 males, 2 females, ?, V, 1970.
- Oreocarabus hortensis hortensis* (Linnaeus, 1758)  
N. Tatry, Korytnica, Czechoslovakia, 1 male, 1 female, 7, VIII, 1968.
- Oreocarabus glabratus* (Paykull, 1790)  
Schmalwancal bei Kissingen, Unterfranken, Germany, 1 male, 2 females, 24, V, 1976; Bohemia Pisek, Czechoslovakia, 1 male, 2 females, ?, VII, 1965; 2 females, 9, III, 1966; 1 male, 6, IV, 1969, all the same locality.
- Orinocarabus linnei linnei* (Panzer, 1810)  
N. Tatry, Donovaly, Czechoslovakia, 1 female, 3, VIII, 1968; Sldv. V. Tatry, Ždiar, Czechoslovakia, 2 males, 2 females, ?, ?, 1968.
- Orinocarabus silvestris silvestris* (Panzer, 1796)  
Lusen, 1200m, Bayrischer Wald, Germany, 7 males, 8 females, 30, VIII, 1976; Bohemia Mer., Ovesne, Czechoslovakia, 3 males, 5 females, 28, VIII, 1966.
- Orinocarabus alpestris dolomitinus* (Mandl, 1965)  
Plose, 2500m, Dolomiten, Italy, 8 males, ?, VIII, 1969.
- Cancellocarabus cancellatus* (Illiger, 1798)  
Buchbach, Pottschach, Austria, 1 female, ?, V, 1975; 1 female, 20, V, 1976, the same locality; Foret de Vevey, Switzerland, 1 female, 5, VIII, 1974.

*Tmesicarabus cristoforii* (Spence, 1833)

Pic de Nère, Haut Pyrenees, 2200m, France, 1 male, 14, VII, 1975.

*Autocarabus auratus lotharingus* (Dejean, 1826)

Montpellier, France, 1 male, 30, III, 1975.

*Chrysocarabus auronitens auronitens* (Fabricius, 1792)

Kissingen-Garitz, Germany, 10 males, 1 female, 1-4, III, 1976; Bohemia Sumava, Pancir, Czechoslovakia, 1 male, 1 female, 1, VI, 1969; Sumava Boubin, Czechoslovakia, 13, IX, 1969.

*Chrysocarabus auronitens helvetiae* (Breuning, 1936)

Les Claudus, 1300m, Jura Mts., Switzerland, 2 males, 1 female, 12, V, 1974.

*Chrysocarabus solieri liguranus* (Breuning, 1936)

Sanova, Pimonte, Italy, 3 males, 2 females, 4, XI, 1976.

*Chrysocarabus splendens ammonius* (Lapouge, 1910)

Foret de la Gresigne, Tarn, France, 2 males, 1 female, 19, III, 1973.

*Mesocarabus problematicus problematicus* (Herbst, 1786)

Kissingen, Unterfranken, Germany, 1 male, 1 female, 19, XI, 1975; 1 male, 1 female, 15, II, 1976; 1 male, 2 females, 11, II, 1977, all the same locality.

*Mesocarabus problematicus inflatus* (Kraatz, 1878)

Collobrieres, Italy, 2 females, ?, XI, 1974.

*Mesocarabus problematicus mulsanti* (Géhin, 1885)

Pic de Nere, Haut Pyrenees, 2200m, France, 1 female, 14, VII, 1975.

*Chaetocarabus intricatus* (Linnaeus, 1761)

Bohemia Katovice, Czechoslovakia, 4 males, 6 females, ?, VIII, 1965; Main Flughafen, Frankfurt, Germany, 3 males, 4 females, 6, III, 1977.

*Hygrocarabus variolosus nodulosus* (Creutzer, 1799)

Bavaria Inferior, Passau, Germany, 1 male, 25, V, 1975.

*Leptocarabus (Leptocarabus) procerulus procerulus* (Chaudoir, 1862)

Osaka, Honshu, Japan, 1 female, ?, VII, 1967; 1 female, ?, XII, 1967, the same locality; Bodai, Tanazawa, Kanakawa Pref., Honshu, Japan, 1 male, 9, XI, 1969; Senjyogahara, Nikko, Tochigi Pref., Honshu, Japan, 1 male, 1 female, 5, XI, 1969; Mt. Mitsutogeyama, Yamanashi Pref., Honshu, Japan, 1 female, 30, VIII, 1970; Kagosaka Pass, 1300m, Yamanashi Pref., Honshu, Japan, 1 male, 5, XI, 1970; Kamikawanori, Okutama, Tokyo Pref., Honshu, Japan, 2 females, 30, IX, 1971.

*Leptocarabus (Leptocarabus) procerulus miyakei* (Nakane, 1960)

Mt. Daisenzan, Ohita Pref., Honshu, Japan, 2 males, 2 females, 31, VI, 1971.

*Leptocarabus (Leptocarabus) shikokuensis* (Nakane, 1960)

Mt. Ishizuchi, Ehime Pref., Shikoku, Japan, 1 male, 1 female, 5, VIII, 1968.

*Leptocarabus (Aulonocarabus) canaliculatus canaliculatus* (Adams, 1812)

Mt. Hsiaowutaishan, Neimonggu Zizhigu, China, 1 female, ?, VIII, 1938.

*Leptocarabus (Aulonocarabus) kurilensis daisetsuzanus* (Kono, 1936)

Mt. Daisetsuzan, Hokkaido, Japan, 1 male, 2, VIII, 1968.

*Leptocarabus (Aulonocarabus) kurilensis rishiriensis* (Nakane, 1957)

Mt. Rishirizan, Is. Rishiritō, off. N.W. Hokkaido, Japan, 1 male, 7, VIII, 1967; 1 male, 10, VIII, 1969, the same locality.

*Leptocarabus (Aulonocarabus) kurilensis sugai* (Ishikawa, 1966)

Mt. Rebundake, Is. Rebunto, off. N.W. Hokkaido, Japan, 1 male, 2 females, 10-11, VIII, 1969.

*Leptocarabus (Adelocarabus) arboreus arboreus* (Lewis, 1882)

Aizankei, Mt. Daisetsuzan, Hokkaido, Japan, 1 male, 1 female, 12-15, VII, 1970.

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- Leptocarabus (Adelocarabus) exilis babai* (Ishikawa, 1968)  
Mt. Tenguharayama, Nagano Pref., Honshu, Japan, 1 male, 1 female, 15, IX, 1969.
- Leptocarabus (Adelocarabus) exilis fujisanus* (Bates, 1883)  
Kagosaka Pass, 1300m, Yamanashi Pref., Honshu, Japan, 1 male, 1 female, 5, XI, 1970.
- Leptocarabus (Adelocarabus) exilis gracillimus* (Bates, 1883)  
Nikengoya, Shizuoka Pref., Honshu, Japan, 1 male, 1 female, 28, VII, 1970.
- Leptocarabus (Pentacarabus) harmandi okutamaensis* (Ishikawa, 1966)  
Mt. Mitsutogeyama, Yamanashi Pref., Honshu, Japan, 1 male, 1 female, 2, VI, 1971.
- Leptocarabus (Pentacarabus) harmandi karasawai* (Ishikawa, 1966)  
Mt. Kigomagadake, Nagano Pref., Honshu, Japan, 2 males, 2 females, 16-21, IX, 1972; 1 male, 1 female, 20, IX, 1974, the same locality.
- Leptocarabus (Astenocarabus) opaculus kurosawai* (Breuning, 1957)  
Aizankei, Mt. Daisetsuzan, Hokkaido, Japan, 5 males, 5 females, 2-5, VII, 1970.
- Hemicarabus (Hemicarabus) tuberculosus* (Dejean et Boisduval, 1829)  
Oiwake Pass, Hidaka, Hokkaido, Japan, 2 males, 22, VIII, 1971.
- Hemicarabus (Homoeocarabus) maeander paludis* (Géhin, 1885)  
Otanoshige, Kushiro, Hokkaido, Japan, 1 male, 24, VIII, 1971.
- Cathaicus brandti* (Faldermann, 1835)  
Shienhien, China, 1 male, 15, VI, 1936.
- Procrustes coriaceus* (Linnaeus, 1758)  
Bratislava, Czechoslovakia, 1 male, 1 female, ?, V, 1970; Münnestädter Wald bei Kissingen, Unterfranken, Germany, 2 males, 6 females, 10-11, IX, 1976.
- Megodontus (Megodontus) violaceus violaceus* (Linnaeus, 1758)  
Bohemia Pisek, Czechoslovakia, 1 female, VII, 1965.
- Megodontus (Megodontus) violaceus candisatus* (Duftschmid, 1812)  
Bayrischer Wald, Buchenau, Germany, 1 male, 1 female, 14, IX, 1975.
- Megodontus (Megodontus) purpurascens crenatocostatus* (Lapouge, 1921)  
Bruxelle, Belgium, 1 male, 1 female, ?, VI, 1975.
- Megodontus (Ainocarabus) kolbei kolbei* (Roeschke, 1897)  
Mt. Apoidake, Hidaka, Hokkaido, Japan, 3 males, 5 females, 26, VIII, 1971.
- Megodontus (Ainocarabus) kolbei aino* (Rost, 1908)  
Aizankei, Mt. Daisetsuzan, Hokkaido, Japan, 1 male, 12-15, VII, 1970.
- Megodontus (Ainocarabus) kolbei kosugei* (Nakane, 1955)  
Mt. Shakotandake, Shiribeshi, Hokkaido, 2 males, 2 females, 18-24, VII, 1972.
- Megodontus (Ainocarabus) kolbei munakataorum* (Ishikawa, 1969)  
Mt. Daisengen, Oshima, Hokkaido, Japan, 1 male, 1 female, 1, IX, 1971.
- Megodontus (Nabicarabus) viettinghoffi caesareus* (Semenow, 1906) subgen. nov.  
Khingan, Manchuria, China, 1 female, 20, VII, 1933.
- Damaster (Acoprolabrus) gehini gehini* (Fairmaire, 1876)  
Jyozankei, Sapporo, Hokkaido, Japan, 3 males, 2 females, 24, VI, 1979; Chitose, Hokkaido, Japan, 3 males, 12, VI, 1979; 1 female, ?, VIII, 1979, the same locality; Aizankei, Mt. Daisetsuzan, Hokkaido, Japan, 1 male, 12-15, VII, 1970; Mombetsu, Hidaka, Hokkaido, Japan, 1 male, ?, VI, 1968; Kitami, Hokkaido, Japan, 1 female, ?, VII, 1969.
- Damaster (Acoprolabrus) gehini radiatocostatus* Ishikawa, 1968  
Oiwake Pass, Hidaka, Hokkaido, Japan, 1 male, 1 female, 27-30, VIII, 1972.
- Damaster (Acoprolabrus) gehini sapporensis* (Uchida et Tamanuki, 1927)  
Mt. Apoitake, Hidaka, Hokkaido, 1 male, 5-8, VIII, 1970; 1 female, 26, VIII, 1971, the same locality.

- Damaster (Acoptolabrus) gehini munakatai* Ishikawa, 1968  
Mt. Daisengendake, Hokkaido, Japan, 1 male, 1, VIII, 1970; 1 male, 1 female, 19-23, VIII, 1973, the same locality.
- Damaster (Koreacoptolabrus) constricticollis constricticollis* (Kraatz, 1886) subgen. nov.  
Yapuloni, Manchuria, China, 1 female, ?, VII, 1938.
- Damaster (Coptolabrus) fruhstorferi* (Roeschke, 1900)  
Mt. Ariakeyama, Is. Tsushima, Nagasaki Pref., Japan, 1 male, 1 female, 2, VII, 1970; Mt. Mitake, Is. Tsushima, Nagasaki Pref., Japan, 2 males, 1 female, 27, IV, 1972.
- Damaster (Coptolabrus) nankotaizanus* (Kano, 1941)  
Taiwan, China, 1 male, 1 female, ?, VII, 1967; Taiton, Taiwan, China, 1 female, ?, V, 1973.
- Damaster (Damaster) blaptoides rugipennis* Motschulsky, 1861  
Obihiro, Hokkaido, Japan, 1 male, 1, VI, 1961; Mombetsu, Hidaka, Hokkaido, Japan, 1 female, ?, V, 1967; Aizankei, Mt. Daisetsuzan, Hokkaido, Japan, 1 male, 1 female, 2-5, VII, 1970; females, 12-15, VII, 1970, the same locality; Hakodate, Hokkaido, Japan, 1 male, ?, VI, 1972; Kushiro, Hokkaido, Japan, 1 female, ?, VIII, 1972; Mt. Apoidake, Hidaka, Hokkaido, Japan, 1 female, ?, VI, 1973; Asahigawa, Hokkaido, Japan, 4 males, 2 females, 8, VII, 1977.
- Damaster (Damaster) blaptoides capito* Lewis, 1881  
Mt. Kinpokusan, Is. Sado, Niigata Pref., Japan, 1 male, 1 female, 2-5, III, 1971; Ogi, Is. Sadogashima, Niigata Pref., Japan, 1 male, 1 female, 21, IX, 1971.
- Damaster (Damaster) blaptoides fortunei* Adams, 1859  
Is. Awashima, Niigata Pref., Japan, 1 male, 1 female, 31, III, 1970; Vic. Murakami City, Niigata Pref., Honshu, Japan, 1 female, 30, III, 1971.
- Damaster (Damaster) blaptoides montanus* (Baba, 1939)  
Mt. Zaozan, Yamagata Pref., Honshu, Japan, 2 males, 1 female, ?, III, 1968; Mt. Adatarasan, Fukushima Pref., Honshu, Japan, 1 male, 1 female, 8, IV, 1970.
- Damaster (Damaster) blaptoides oxuroides* Schaum, 1862  
Kizoro, Saitama Pref., Honshu, Japan, 3 males, 2 females, ?, III, 1968; Bodai, Tanazawa, Kanakawa Pref., Honshu, Japan, 1 male, 1 female, 9, XI, 1969; Kagosaka Pass, 1300m, Yamanashi Pref., Honshu, Japan, 1 male, 1 female, 3, XI, 1970.
- Damaster (Damaster) blaptoides blaptoides* Kollar, 1836  
Yamano Machi, Kobe Pref., Honshu, Japan, 1 male, 2 females, 10, III, 1968; Minoo, Osaka Pref., Honshu, Japan, 1 female, ?, IX, 1968.
- Cychrus caraboides* (Linnaeus, 1758)  
Foret de Soignes, Brabant, Belgium, 1 male, 1 female, 25, XII, 1972; Oberbach Rhon, 700m, France, 1 male, 2 females, 20, III, 1977.
- Cychrus rostratus* (Linnaeus, 1775)  
Forst, 550m, Bern, Switzerland, 1 male, 1 female, 5, VIII, 1974.
- Cychrus morawitzi* Géhin, 1885  
Mt. Apoidake, Hidaka, Hokkaido, Japan, 2 males, 2 females, 26, VIII, 1971.

## APPENDIX

During the press of this monograph, J.L. Kim (December, 1983) has been issued "Taxonomic revision of the Carabina from Korea. Thes. subm. Comm. Grad. Sch. Kyungp. Nat. Univ., 38pp.". While it has been possible to revise his species-list here it has not been possible to incorporate details in the main text.

He reported the following 14 species bearing with several subspecies from S. Korea: *Carabus* (*Eucarabus*) *sternbergi sternbergi* (=sensu lato, the subgeneric status is error for *Parhomopterus*), *C. (E.) sternbergi cartereti* (=partim), *C. (E.)* new species (=the unnamed one from Mt. Chirisan, GN, is indeed not a new species that he recognized, but belongs to one of the local highland races of *Carabus* (*Parhomopterus*) *sternbergi*, as described in the authors' monograph, *chirisanensis* Kwon et Lee subsp. nov.), *C. (Isiocarabus) fiduciarius gisellae* (=error for *C. (I.) fiduciarius saishutoicus*), *C. (I.) fiduciarius kirinicus* (=partim, in the distributional range he gave, Is. Chejudo is an error for the preceding subspecies), *Lipaster* (*Morphocarabus*) *venustus opacipennis* (= *Lipaster* (*Leptinocarabus*) *wulffi* *opacipennis*: partim), *Leptocarabus* (*Adelocarabus*) *semiopacus*, *L. (A.) seishinensis* (=sensu lato), *L. (A.) koreanus* (=sensu lato), *Hemicarabus* (*Hemicarabus*) *tuberculosus*, *H. (Homoeocarabus) maeander paludis* (=error for *H. (H.) maeander quelpartensis* Kwon et Lee subsp. nov.), *Eurycarabus* (*Tomocarabus*) *fraterculus* (= *Tomocarabus fraterculus*: sensu lato), *Damaster* (*Acoptolabrus*) *leechi* (= *D. (Koreacoptolabrus) constricticollis*), *D. (A.) mirabilissimus* (= *D. (K.) mirabilissimus*), *D. (Coptolabrus) jankowskii jankowskii* (=sensu lato), *D. (C.) jankowskii fusanus* (=partim error for *D. (C.) jankowskii kojensis*), *D. (C.) jankowskii quelpartianus*, *D. (C.) jankowskii kojensis*, *D. (C.) smaragdinus monilifer*, *D. (C.) smaragdinus branicki* (=sic et partim, Is. Chejudo that he gave in the distributional range is an error for the preceding subspecies), *D. (C.) smaragdinus fulminifer*, *D. (C.) smaragdinus* new subspecies (=the unnamed local race from Mt. Chirisan, GN, was described in the authors' monograph as *sangjaei* Kwon et Lee subsp. nov.).

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(R)

*rufinus* Beh. et Breun., *Eucarabus canaliculatus* 72

(S)

*saishutoicus* Csiki, *Carabus fiduciaris* 41  
*sangjaei* subsp. nov., *Damaster smaragdinus* 126  
*Scambocarabus* Reitt. 94  
*schrencki* Men., *Damaster* 107  
*seishinensis* Lap., *Leptocarabus* 83, 84  
*semicoriaceus* Kraatz, *Lipaster latreillei* 68  
*semicoriaceous*(sic), *Carabus latreillei* 68  
*semiopacus* Reitt., *Leptocarabus* 81  
*seonhyeongae* sp. nov., *Damaster* 108  
*septemcarinatus* Motsch., *Carabus* 79  
*seunglaki* subsp. nov., *Leptocarabus seishinensis* 85  
*smaragdinus* Fisch., *Damaster* 122  
*sobaeksanensis* subsp. nov., *Carabus sternbergi* 52  
*Spinulati* Ishik. 28  
*ssangnamensis* subsp. nov., *Lipaster wulffi* 64  
*sternbergi* Roeschk., *Carabus* 43, 44, 49  
*stjernvalli* Mann., *Carabus* 57  
*striatus*, *Apotomopterus dehaani*(sic) 40  
*striatus* Chaud., *Carabus* 43  
*stscheglowi* Mann., *Carabus* 55  
*sycophanta* Linn., *Carabus* 19, 22

(T)

*taqueti* Lap., *Calosoma* 20  
*tarbagataicus* Kraatz, *Carabus* 59  
*telluris* Lew., *Carabus granulatus* 34, 89

*Titanocechenus* Breun, et Rusp. 57  
*Tomocarabus* Reitt. 97  
*touzalini* Lap., *Carabus sternbergi* 47  
*Trachycarabus* G&h. 66  
*tristiculus* Kraatz, *Lipaster hummeli* 60  
*truncaticollis* Eschsch., *Carabus* 56  
*tuberculatus* Fisch., *Carabus* 89  
*Tuberculosis* Dej. et Boisd., *Hemicarabus* 89  
*Tylocarabus* Reitt. 55  
*tyrannus* Lap., *Carabus smaragdinus* 124

(U)

*ussuriensis* Born, *Carabus granulatus* 34

(V)

*van-volxemi* Putz., *Carabus* 65  
*venustus* Mor., *Carabus* 62, 63  
*vietinghoffi* Adams, *Megodontus* 103  
*vogti* Beh. et Breun., *Lipaster* 74  
*vogtianus* Beh. et Breun., *Leptocarabus* 85  
*vojnitsi* Mandl, *Leptocarabus canaliculatus* 73

(W)

*weolseoae* subsp. nov., *Leptocarabus koreanus* 78  
*Weolseocarabus* subgen. nov. 76  
*wulffi* Mor., *Lipaster* 62, 63

(Y)

*yeongsiki* subsp. nov., *Tomocarabus fraterculus* 100  
*yezoensis* Bat., *Carabus granulatus* 34

PLATE \_\_\_\_\_

## Plate I.

### Hind wings of carabids (1).

1. *Campalita chinense* (Seoul, GG, 14, VIII, 1971).
2. *Charmosta lugens* (Ch'ŏngjin, HB, ?, VII, 1930).
3. *Calosoma maximowiczi* (Mt. Hallasan, JJ, 8, VI, 1968).
4. *Calosoma inquisitor cyanescens* (Mt. Myŏngjisan, GG, 27, V, 1975).

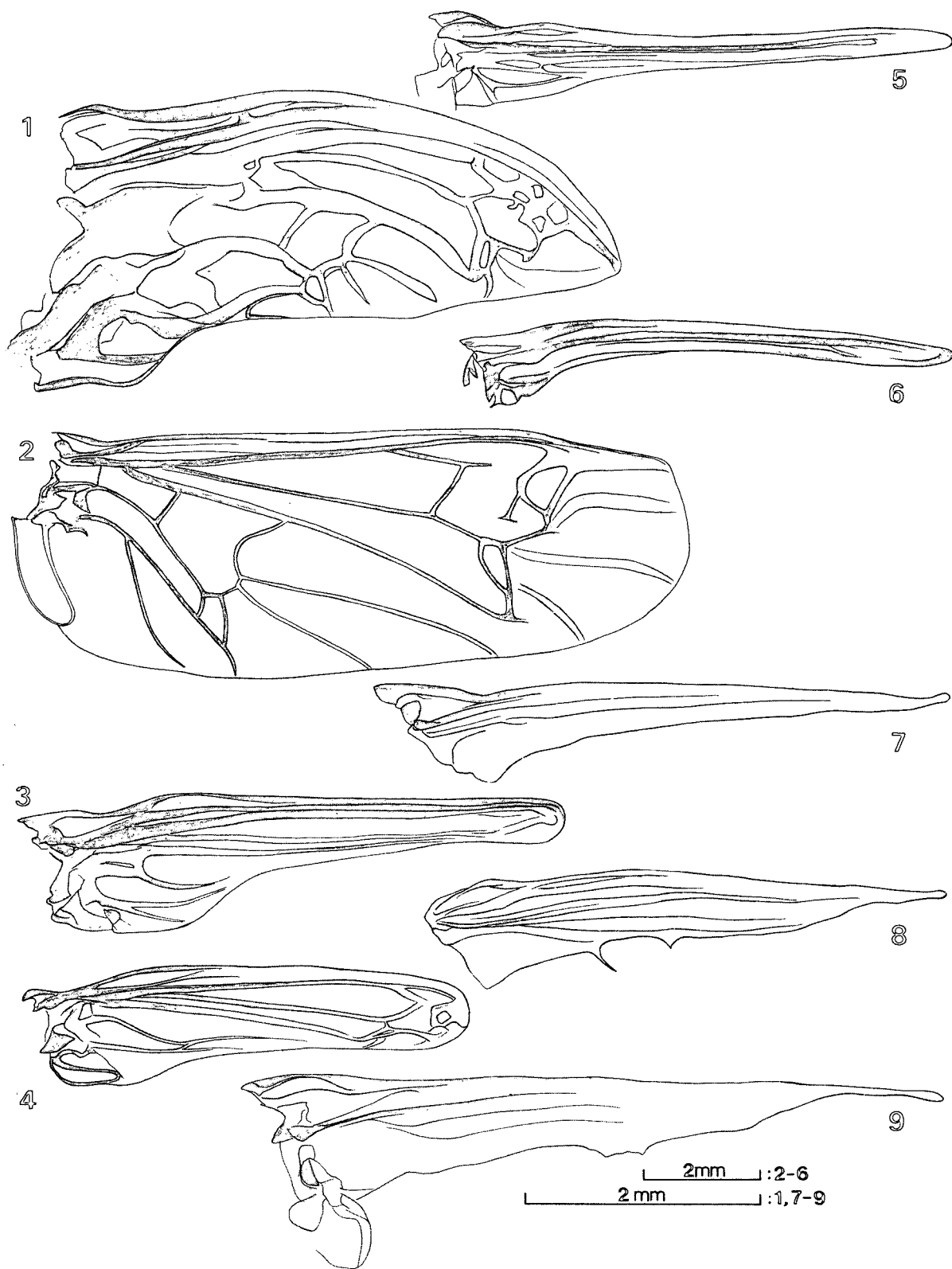
PLATE I



## Plate II.

### Hind wings of carabids (2).

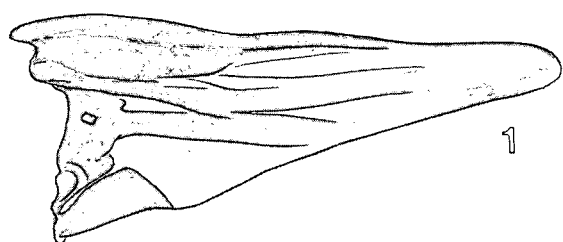
1. *Apotomopterus (Limnocarabus) clathratus maacki* (Nanam, HB, ?, VIII, 1929).
2. *Carabus* (s. str.) *granulatus ussuriensis* (Nanam, HB, ? VI, 1930).
3. *Carabus (Isiocarabus) fiduciarius saishutoicus* (Mt. Hallasan, JJ, 8, VI, 1972).
4. *Carabus (Eutelocarabus) conciliator faldermanni* (Nanam, HB, ?, V, 1928).
5. *Lipaster (Morphocarabus) hummeli tristiculus* (Khingan, Manchuria, 20, VII, 1933).
6. *Lipaster (Leptinocarabus) wulffiusi opacipennis* (Mt. Sölaksan, GW, 12, VIII, 1969).
7. *Leptocarabus (Adelocarabus) seishinensis* (Mt. P'algongsan, GB, 3, IX, 1982).
8. *Leptocarabus (Adelocarabus) semiopacus* (Mt. P'algongsan, GB, 10, IX, 1982).
9. *Leptocarabus (Weolseocarabus) koreanus weolseoe* subgen. et subsp. nov. (Mt. Sölaksan, GW, 13, VIII, 1969).



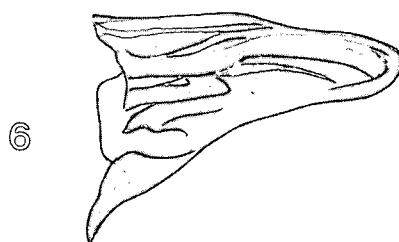
### Plate III.

#### Hind wings of carabids (3).

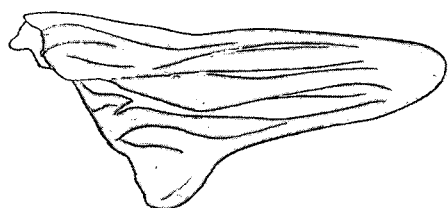
1. *Carabus (Parhomopterus) sternbergi cartereti* (Mt. Odaesan, GW, 18, IX, 1982).
2. *Carabus (Orientocarabus) billbergi pumilus* subgen. nov. (Pujöllyöng, HN, ?, VIII, 1935).
3. *Hemicarabus* (s. str.) *tuberculosis* (Mt. Hallasan, JJ, 18, VII, 1978).
4. *Hemicarabus (Homoeocarabus) maeander quelpartensis* subsp. nov. (Mt. Hallasan, JJ, 20, VI, 1968).
5. *Scambocarabus kruberi hallasanensis* subsp. nov. (Mt. Hallasan, JJ, 8, VI, 1972).
6. *Tomocarabus fraterculus affinis* subsp. nov. (Mt. Sölaksan, GW, 9, VI, 1971).
7. *Megodontus (Nabicarabus) vietinhoffi borealis* subgen. et subsp. nov. (Mt. Kwanmobong, HB, 4, VIII, 1933).
8. *Damaster (Koreacoptolabus) constricticollis* subgen. nov. (Huch'ang, PB, 15, VIII, 1936).
9. *Damaster (Koreacoptolabus) mirabilissimus* subgen. nov. (Mt. T'aebaeksan, GW, 27, VI, 1976).
10. *Damaster (Coptolabus) jankowskii jankowskii* (Mt. Sölaksan, GW, 13, VI, 1970).
11. *Damaster (Coptolabus) smargdinus fulminifer* (Mt. Kwanmobong, HB, 18, VII, 1932).



1



6



2



7



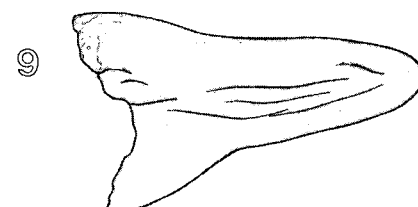
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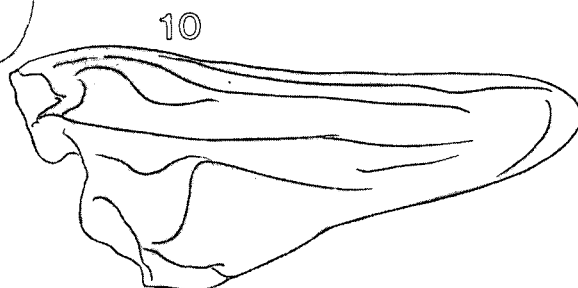
8



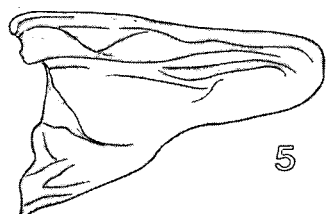
4



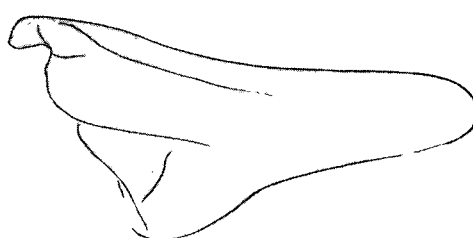
9



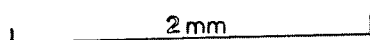
10



5



11



#### Plate IV.

##### Aedeagi of carabids in lateral view (1).

1. *Calosoma maximowiczi* (Mt. Ch'ŏnmasan, GG, 28, V, 1972).
2. *Calosoma maximowiczi* (Mt. Hallasan, JJ, 30, VII, 1972).
3. *Calosoma inquisitor cyanescens* (Nanam, HB, 10, VI, 1929).
4. *Charmosta lugens* (Ch'ongjin, HB, ?, VIII, 1929).
5. *Campalita chinense* (Seoul, GG, 14, VIII, 1971).
6. *Campalita chinense* (Kamishihoro, Tokachi, Hokkaido, Japan, 23, VII, 1970).
7. *Apotomopterus (Limnocarabus) clathratus aquatilis* comb. nov. (Chikauchi, Miyako City, Honshu, Japan, 30, VII, 1973).
8. *Apotomopterus (Euleptocarabus) porrecticollis porrecticollis* (Mt. Sotoyama, Nikko, Tochiki Pref., Honshu, Japan, 3, XI, 1969).
9. *Apotomopterus* (s. str.) *sauteri* (Tengchik, Kaoshunsien, Taiwan, ?, VIII, 1975).

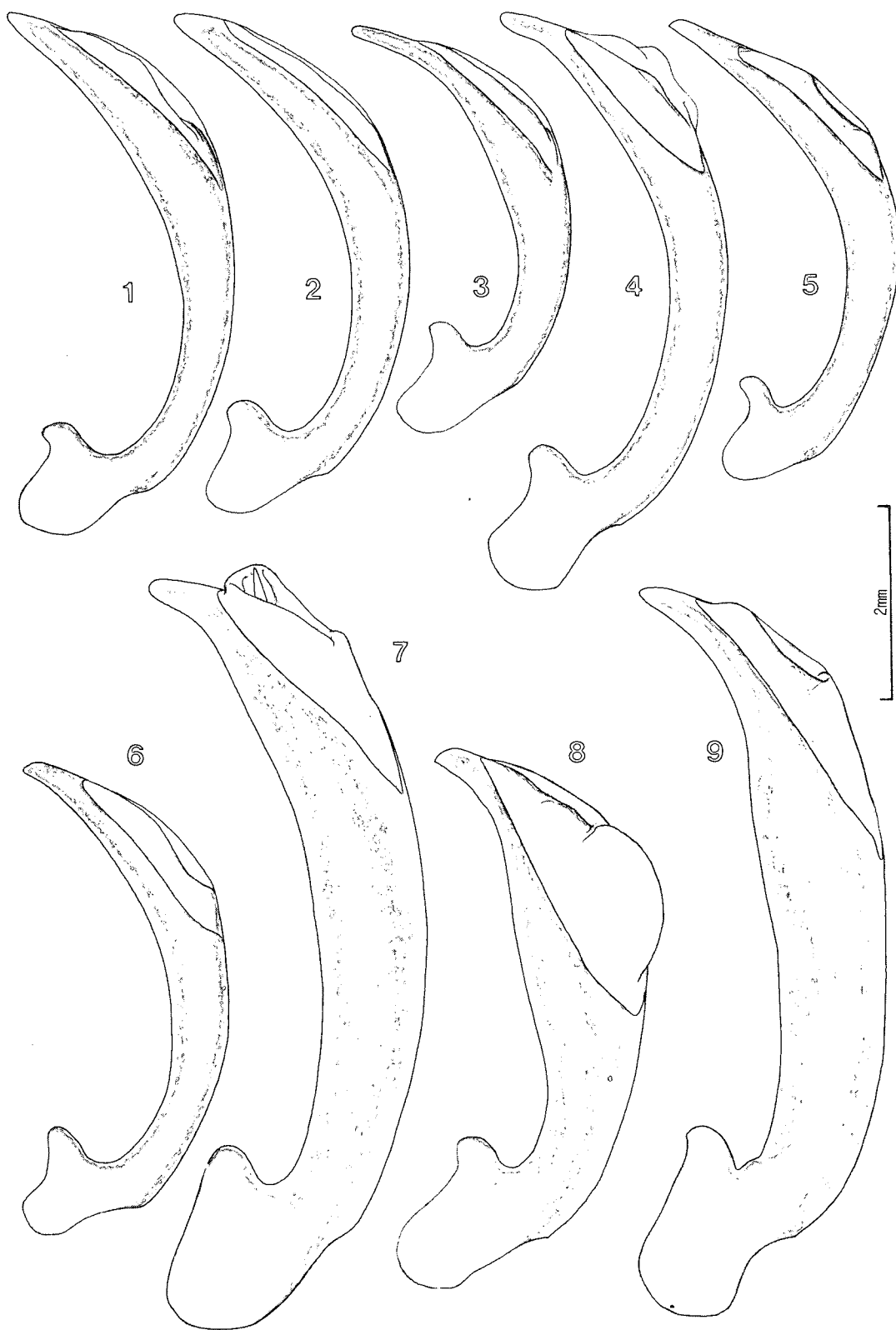
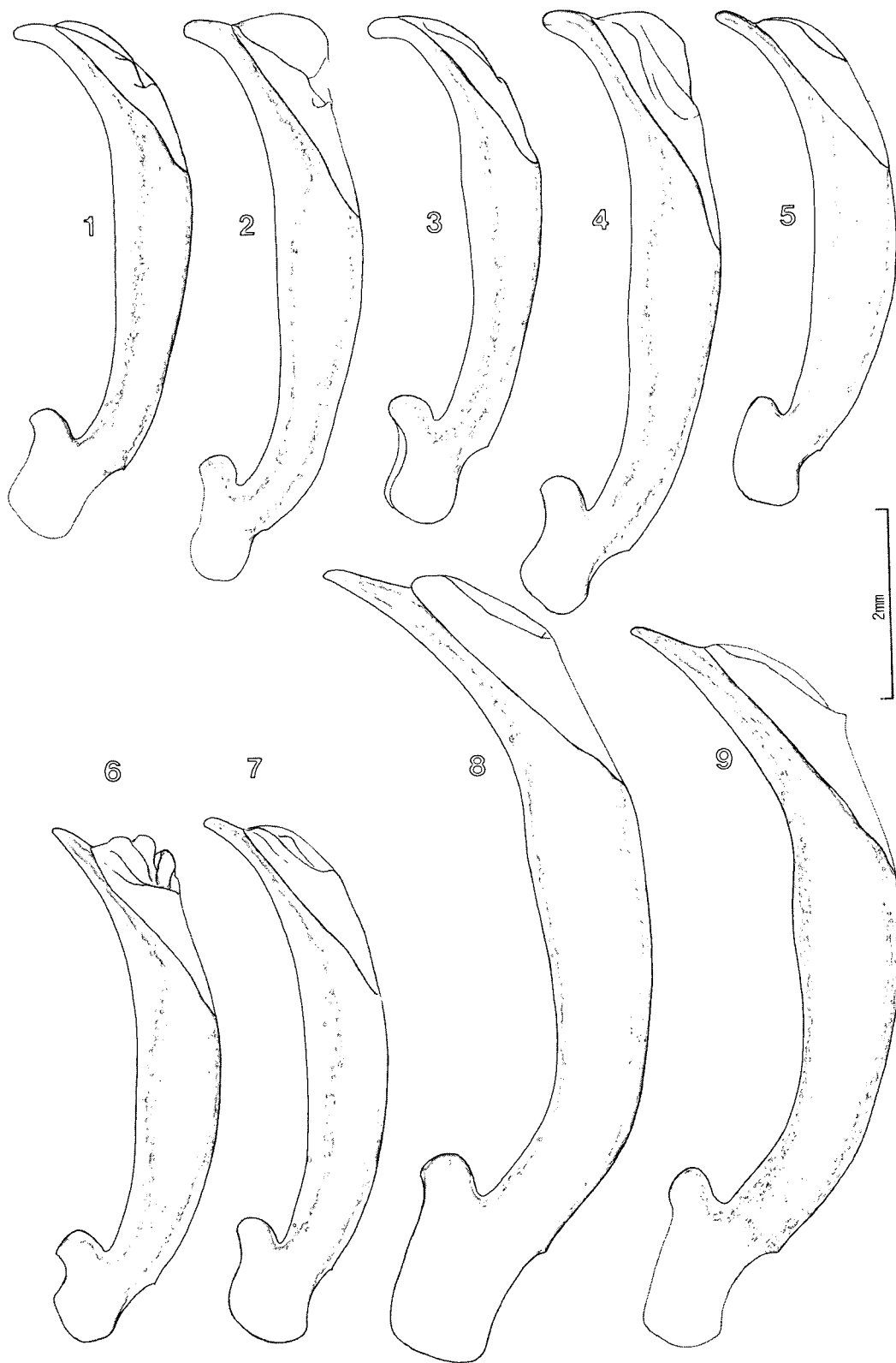


Plate V.

Aedeagi of carabids in lateral view (2).

1. *Carabus* (s. str.) *granulatus granulatus* (Kissingen, Unterfranken, Germany, 1, III, 1976).
2. *Carabus* (s. str.) *granulatus ussuriensis* (Mt. Kwanmobong, HB, 18, VII, 1932).
3. *Carabus* (s. str.) *granulatus telluris* (Fukushimagata, Tsukioka Pref., Honshu, Japan, 31, III, 1969).
4. *Carabus* (s. str.) *granulatus yezoensis* (Kawayu, Kushiro, Hokkaido, Japan, 10, VII, 1969).
5. *Carabus* (*Eutelocarabus*) *arvensis germaniae* (Gr. Wald, Hoffenheim, Germany, ?, VI, 1974).
6. *Carabus* (*Eutelocarabus*) *conciliator faldermanni* (Seoul, GG, ?, VII, 1961).
7. *Carabus* (*Eutelocarabus*) *conciliator hokkaidensis* (Mt. Apoidake, Hidaka, Hokkaido, Japan, 5-9, VIII, 1970).
8. *Carabus* (*Isiocarabus*) *fiduciarius kirinicus* (Mt. Un'gilsan, GG, 22, V, 1983).
9. *Carabus* (*Isiocarabus*) *fiduciarius saishutoicus* (Mt. Hallasan, JJ, 28, VII, 1978).



## Plate VI.

### Aedeagi of carabids in lateral view (3).

1. *Carabus (Ohomopterus) dehaanii dehaanii* (Mt. Hieizan, Kyoto Pref., Honshu, Japan, 15, I, 1967).
2. *Carabus (Ohomopterus) japonicus japonicus* (Mt. Sobozan, Ohita Pref., Kyushu, Japan, 29, XII, 1969).
3. *Carabus (Ohomopterus) lewisianus awakazusanus* (Mt. Tomisan, Chiba Pref., Honshu, Japan, 2, I, 1969).
4. *Carabus (Ohomopterus) albrechti freyi* (Ogi, Is. Sadogashima, Honshu, Japan, 21, XI, 1971).
5. *Carabus (Ohomopterus) yamato* (Mt. Katsuragisan, Nara Pref., Honshu, Japan, 30, V,-4, VI, 1975).
6. *Carabus (Ohomopterus) esakii* (Izu Peninsula, Shizuoka Pref., Honshu, Japan, 20, XII, 1973).
7. *Carabus (Ohomopterus) yaconinus yaconinus* (Mt. Hanataka, Shimane Pref., Honshu, Japan, 20, III, 1969).
8. *Carabus (Ohomopterus) insulicola insulicola* (Kizoro, Saitama Pref., Honshu, Japan, ?, II, 1968).
9. *Carabus (Ohomopterus) uenoi* (Mt. Katsuragisan, Nara Pref., Honshu, Japan, 30, V,-4, VI, 1975).

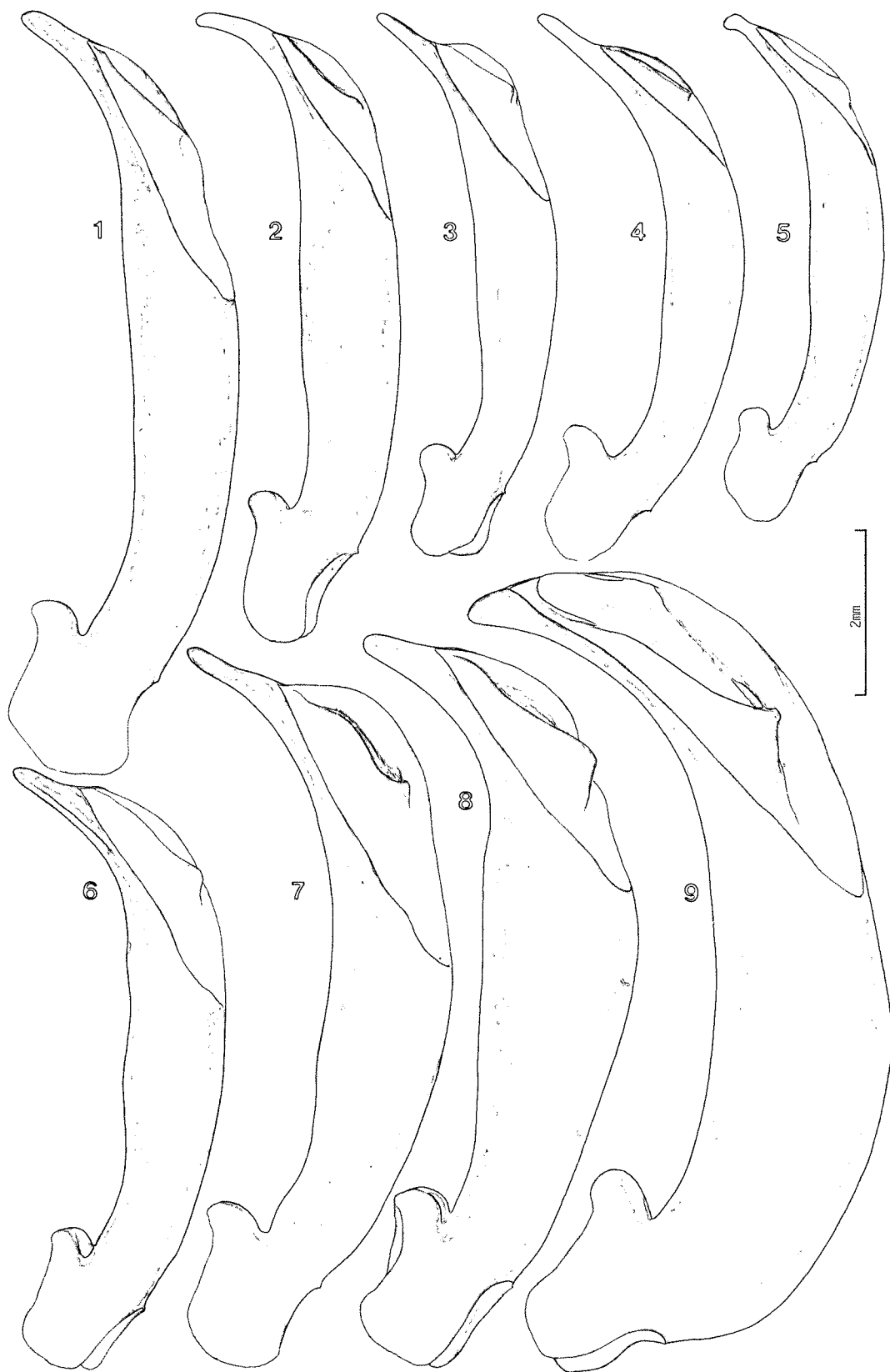


Plate VII.

Aedeagi of carabids in lateral view (4).

1. *Carabus (Eucarabus) ullrichi ullrichi* (Slou., Lipt., Osada, Czechoslovakia,?, VIII, 1968).
2. *Carabus (Parhomopterus) sternbergi cartereti* (Mt. Sólaksan, GW, 27, VII, 1982).
3. *Carabus (Parhomopterus) sternbergi cartereti* (Mt. Odaesan, GW, 18, IX, 1982).
4. *Carabus (Parhomopterus) sternbergi cartereti* (Mt. Sogŭmgang, GW, 7, IX, 1980).
5. *Carabus (Parhomopterus) sternbergi cartereti* (Mt. T'aebaeksan, GW, 27, VI, 1976).
6. *Carabus (Parhomopterus) sternbergi sobaeksanensis* subsp. nov. (Mt. Sobaeksan, GB, 24, VII, 1977).
7. *Carabus (Parhomopterus) sternbergi sobaeksanensis* subsp. nov. (Mt. Chuhŭlsan, GB, 5, VI, 1983).
8. *Carabus (Parhomopterus) sternbergi palgongsanensis* subsp. nov. (Mt. P'algongsan, GB, 10, IX, 1982).

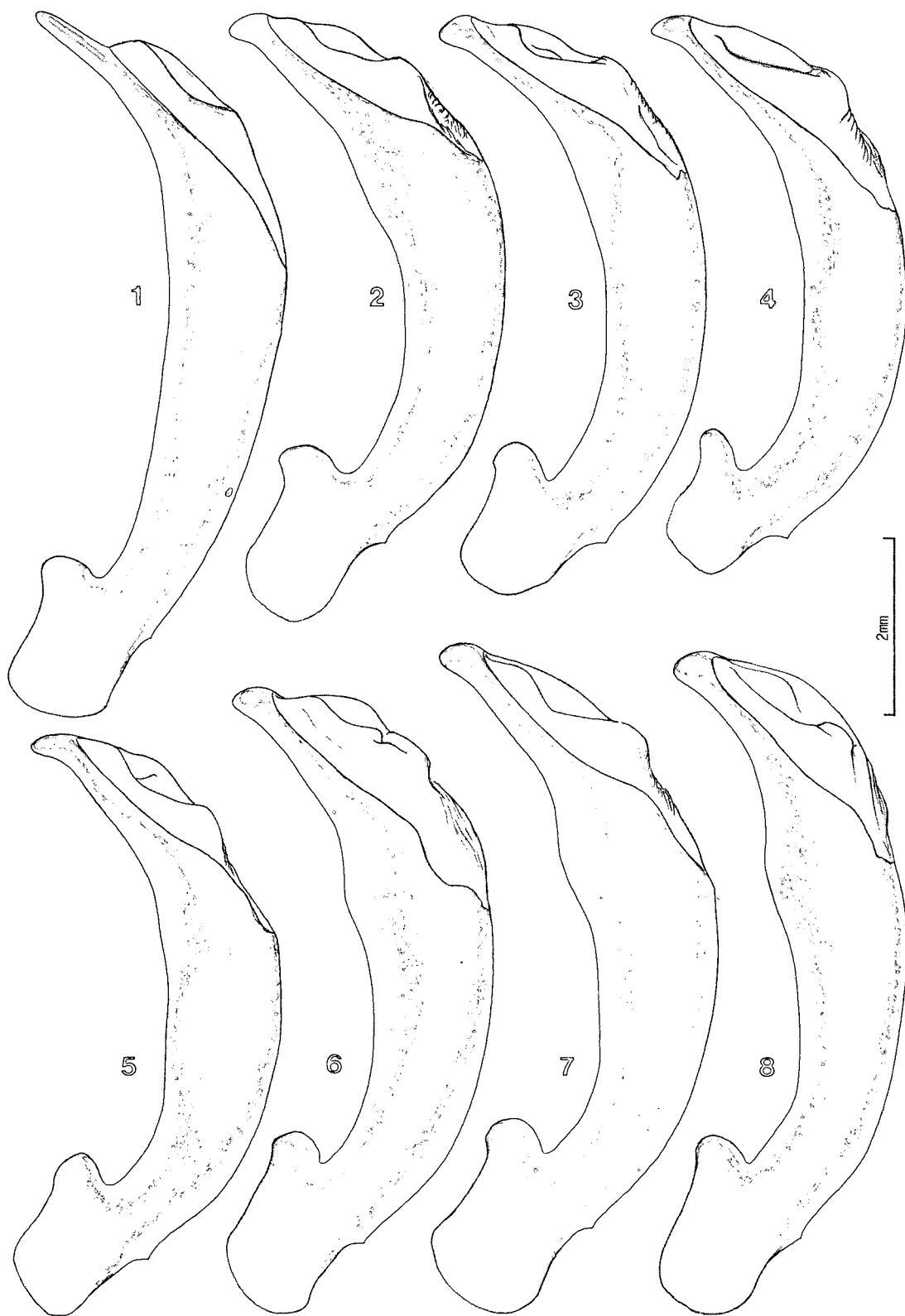


Plate VIII.

Aedeagi of carabids in lateral view (5).

1. *Carabus (Parhomopterus) sternbergi tongdosanus* subsp. nov. (Mt. Sinbulsan, GN, 25, IX, 1982).
2. *Carabus (Parhomopterus) sternbergi chirisanensis* subsp. nov. (Mt. Chirisan, GN, 13, VII, 1981).
3. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Pangdaesan, GW, 27, VII, 1974).
4. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Myŏngjisan, GG, 6, VI, 1976).
5. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Soyosan, GG, 5, VI, 1977).
6. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Aengmubong, GG, 26, VI, 1971).
7. *Carabus (Parhomopterus) sternbergi sternbergi* (Kwangnŭng, GG, 15, VIII, 1971).
8. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Ch'ŏnmasan, GG, 16, V, 1972).

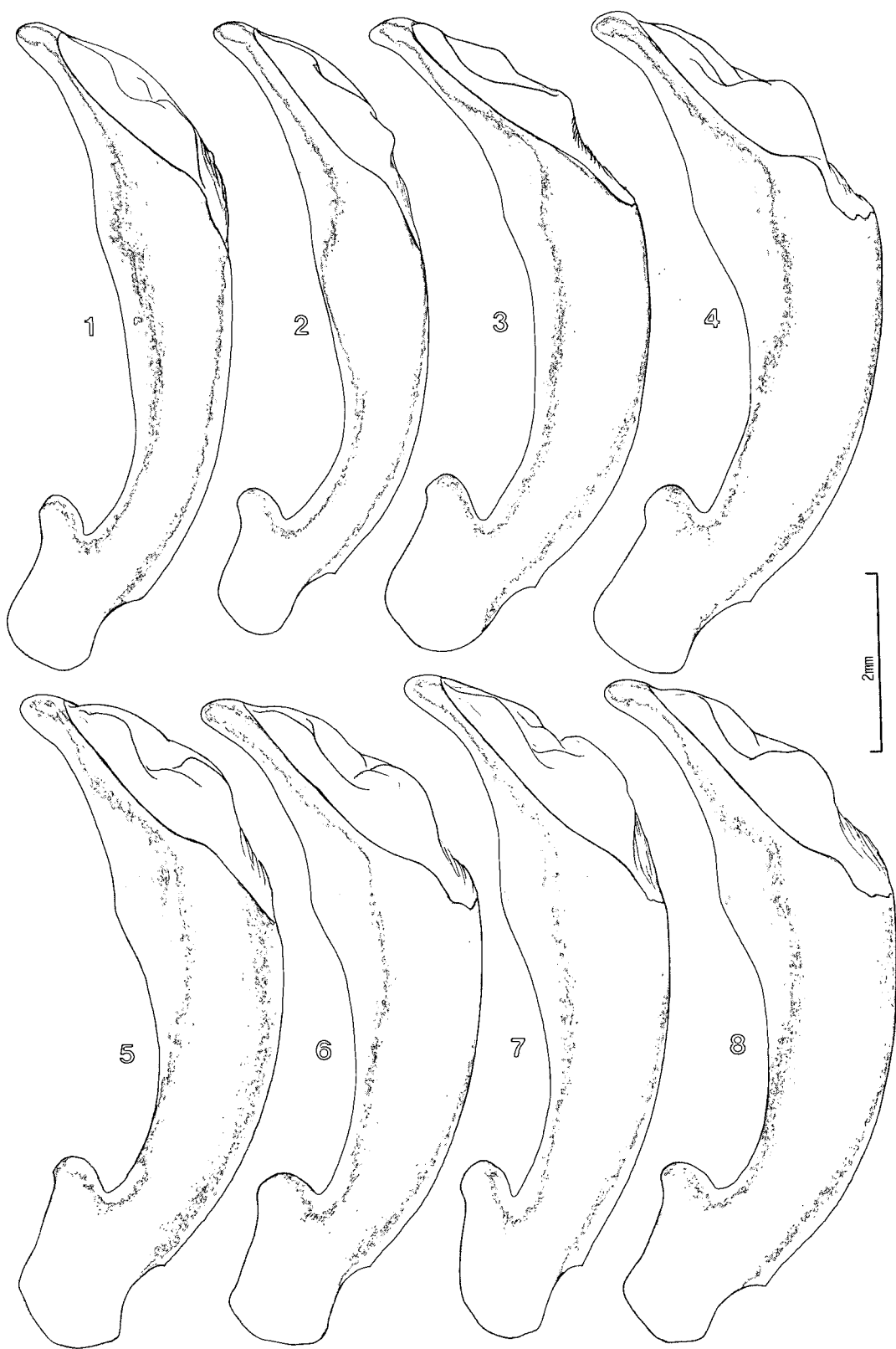


Plate IX.

Aedeagi of carabids in lateral view (6).

1. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Tobongsan, GG, 19, VIII, 1976).
2. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Tögam-san, GG, 6, IX, 1976).
3. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Yongmunsan, GG, 7, VI, 1977).
4. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Ch'iaksan, GW, 14, VI, 1976).
5. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Kwangdöksan, CN, 11, VII, 1982).
6. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Kyeryongsan, CN, 14, IX, 1975).
7. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Songnisan, CB, 10, VI, 1977).
8. *Carabus (Parhomopterus) sternbergi honamensis* subsp. nov. (Mt. Chogyesan, JN, 10, VIII, 1976).

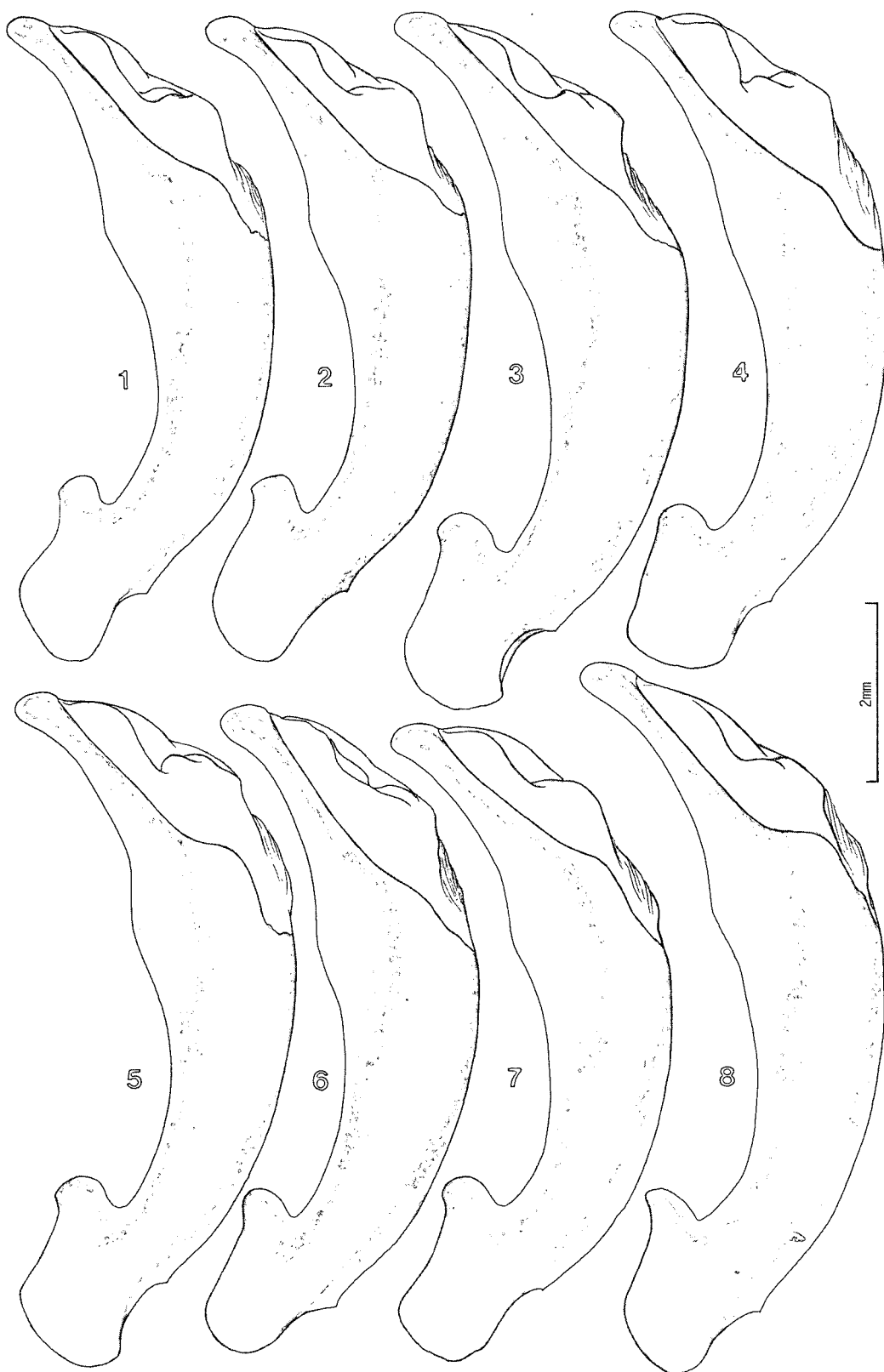


Plate X.

Aedeagi of carabids in lateral view (7).

1. *Carabus (Parhomopterus) sternbergi honamensis* subsp. nov. (Is. Ch'ujado, JJ, 31, VII, 1972).
2. *Carabus (Parhomopterus) sternbergi touzalini* (Mt. Hallasan, JJ, 22, V, 1968).
3. *Carabus (Parhomopterus) sternbergi kojedoensis* subsp. nov. (Is. Kōjedo, GN, 19, VI, 1970).
4. *Carabus (Parhomopterus) namhaedoensis* sp. nov. (Mt. Kūmsan in Is. Namhaedo, GN, 13, VI, 1977).
5. *Lipaster (Morphocarabus) monilis consitus* (Muhlhouse, France, 20, IV, 1976).
6. *Lipaster (Morphocarabus) hummeli tristiculus* (Khingan, Manchuria, 20, VII, 1933).

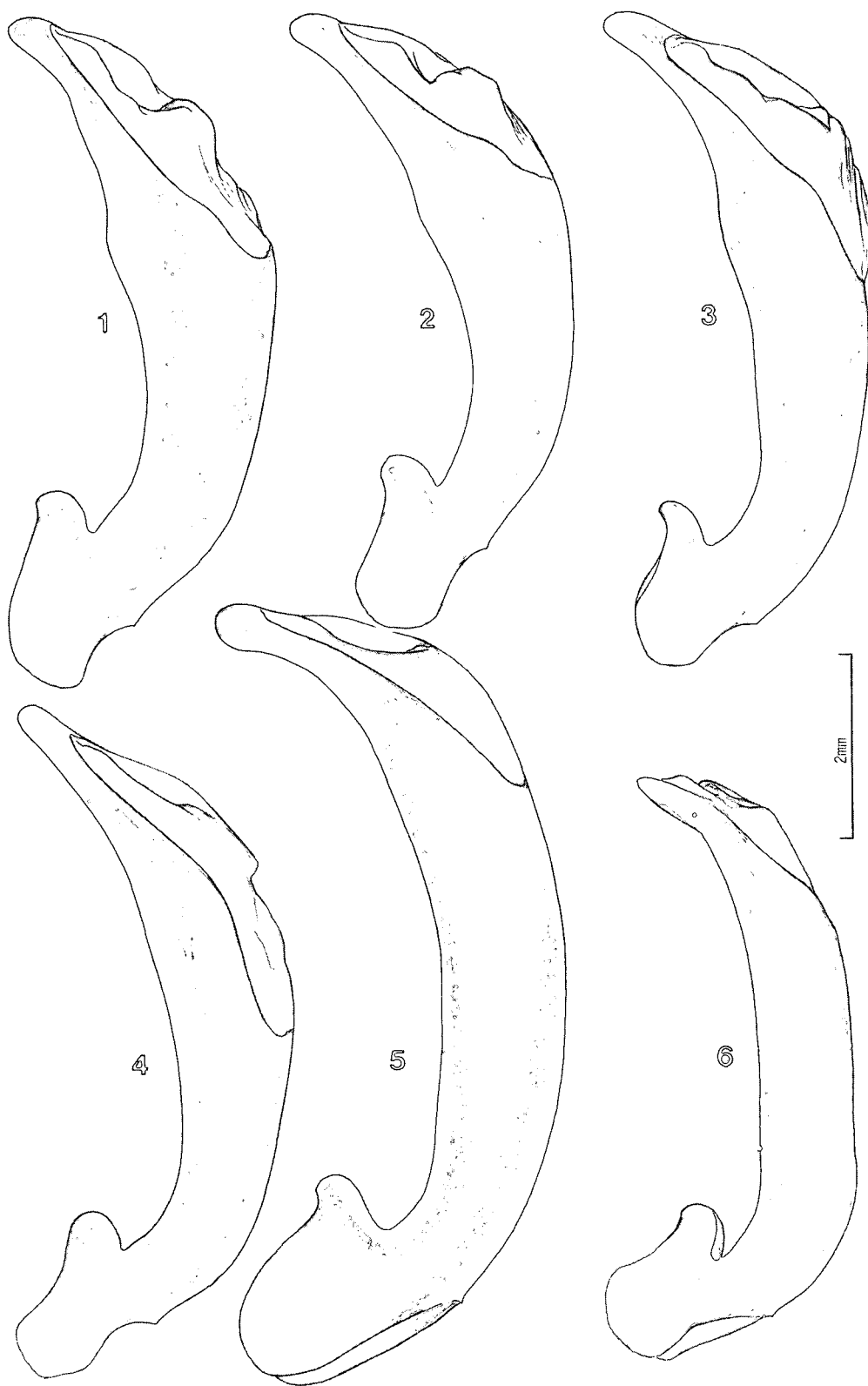
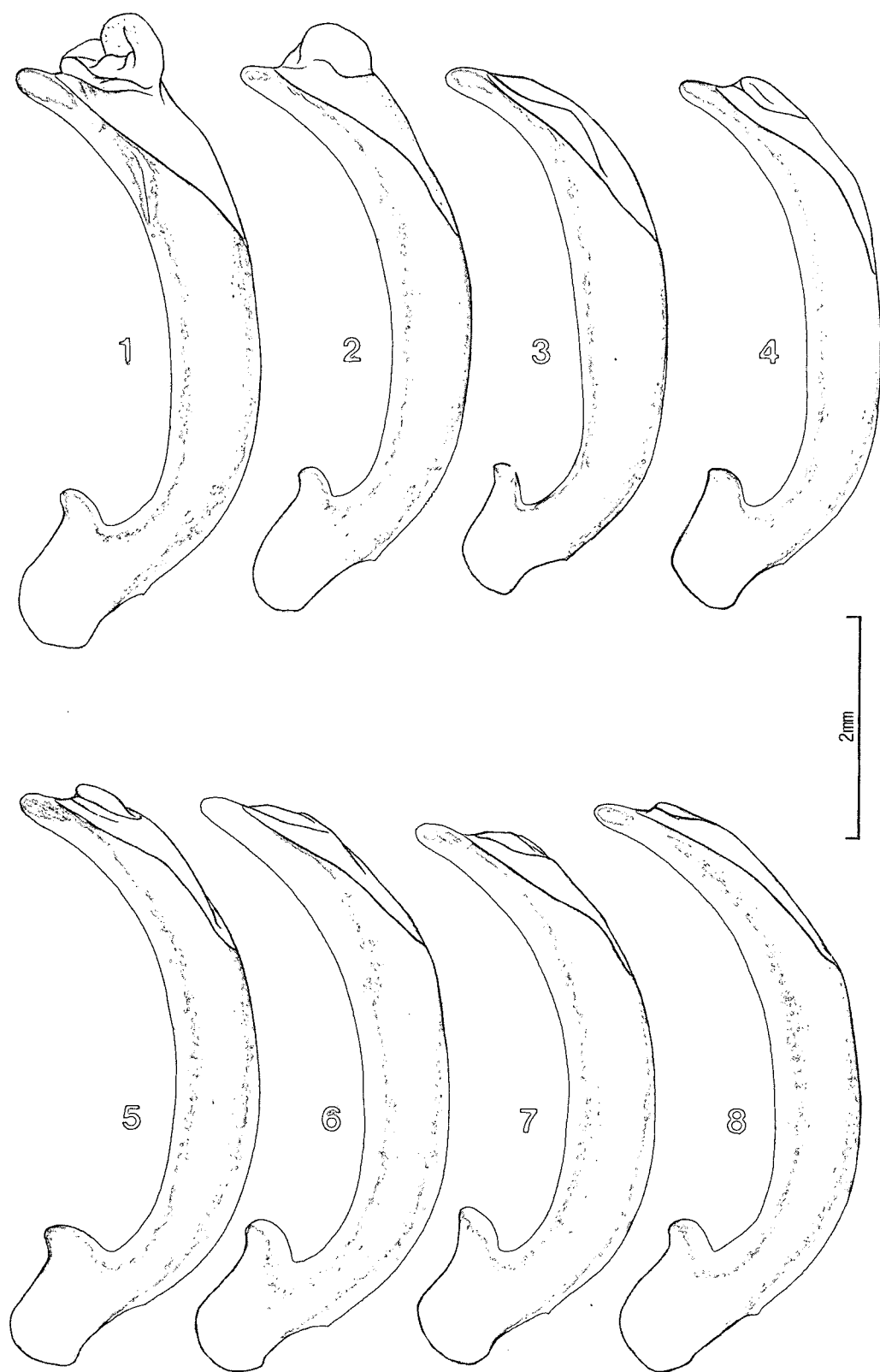


Plate XI.

Aedeagi of carabids in lateral view (8).

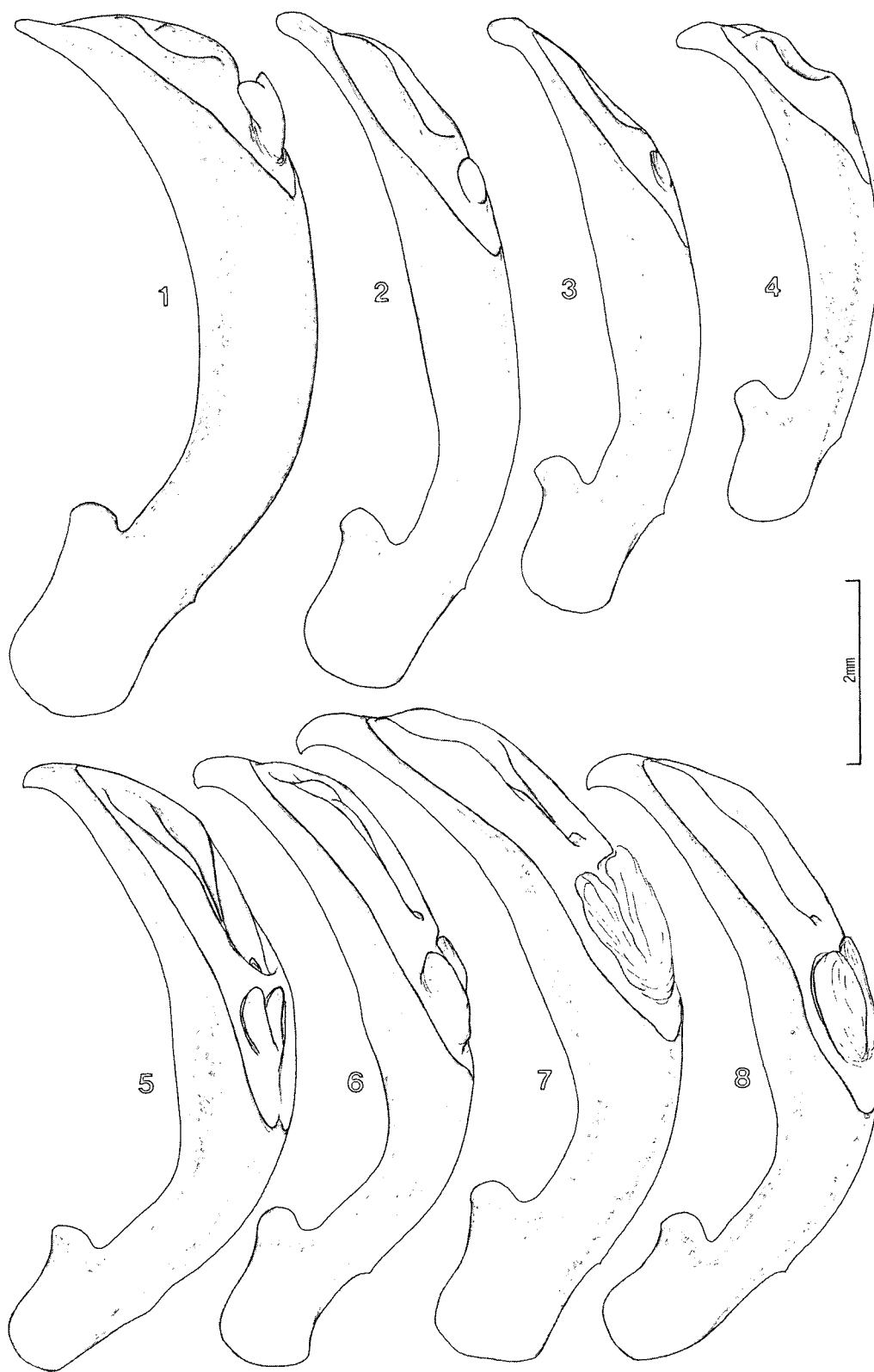
1. *Lipaster (Leptinocarabus) wulffiusi wulffiusi* (Mt. Kwanmobong, HB, 28, VII, 1934).
2. *Lipaster (Leptinocarabus) wulffiusi opacipennis* (Mt. Sölkasan, GW, 12, VIII, 1969).
3. *Lipaster (Leptinocarabus) wulffiusi opacipennis* (Mt. Kach'ilbong, GW, 23, VII, 1981).
4. *Lipaster (Leptinocarabus) wulffiusi opacipennis* (Mt. Odaesan, GW, 7, VIII, 1971).
5. *Lipaster (Leptinocarabus) wulffiusi opacipennis* (Mt. Pängdaesan, GW, 26, VII, 1974).
6. *Lipaster (Leptinocarabus) wulffiusi opacipennis* (Mt. Myöngjisan, GG, 27, V, 1978).
7. *Lipaster (Leptinocarabus) wulffiusi opacipennis* (Mt. Tögamsan, GG, 6, IX, 1976).
8. *Lipaster (Leptinocarabus) wulffiusi alpinus* subsp. nov. (Mt. T'aebaeksan, GW, 27, VI, 1976).



## Plate XII.

### Aedeagi of carabids in lateral view (9).

1. *Leptocarabus* (s. str.) *procerulus procerulus* (Senjyogahara, Nikko, Tochigi Pref., Honshu, Japan, 5, XI, 1969).
2. *Leptocarabus* (*Aulonocarabus*) *kurilensis sugai* (Mt. Rebundake, Is. Rebunto, Hokkaido, Japan, 2, VIII, 1968).
3. *Leptocarabus* (*Aulonocarabus*) *kurilensis daisetsuzanus* (Mt. Daisetsuzan, Hokkaido, Japan, 2, VIII, 1968).
4. *Leptocarabus* (*Aulonocarabus*) *kwanmobongensis* sp. nov. (Mt. Kwanmobong, HB, ?, VII, 1934).
5. *Leptocarabus* (*Weolseocarabus*) *koreanus weolseae* subgen. et subsp. nov. (Mt. Sŏlaksan, GW, 13, VIII, 1969).
6. *Leptocarabus* (*Weolseocarabus*) *koreanus koreanus* subgen. nov. (Mt. Kach'ilbong, GW, 24, VII, 1981).
7. *Leptocarabus* (*Weolseocarabus*) *koreanus koreanus* subgen. nov. (Konjam, GG, 6, IX, 1976).
8. *Leptocarabus* (*Weolseocarabus*) *koreanus koreanus* subgen. nov. (Mt. P'algongsan, GB, 3, IX, 1982).



### Plate XIII.

#### Aedeagi of carabids in lateral view (10).

1. *Leptocarabus (Weolseocarabus) koreanus koreanus* subgen. nov. (Mt. T'ohamsan, GB, 22, IX, 1982).
2. *Leptocarabus (Weolseocarabus) koreanus koreanus* subgen. nov. (Mt. Kayasan, GN, 12, IX, 1982).
3. *Leptocarabus (Weolseocarabus) koreanus koreanus* subgen. nov. (Mt. Tögyusan, JB, 27, VII, 1983).
4. *Leptocarabus (Weolseocarabus) koreanus koreanus* subgen. nov. (Mt. Kŭnjöngsan, GN, 21, IX, 1982).
5. *Leptocarabus (Weolseocarabus) koreanus koreanus* subgen. nov. (Is. Kōjedo, GN, 15, VI, 1972).
6. *Leptocarabus (Weolseocarabus) koreanus minor* subgen. et subsp. nov. (Mt. Sobaeksan, GB, 23, VII, 1977).
7. *Leptocarabus (Adelocarabus) semiopacus* (Mt. Sölkasan, GW, 12, VIII, 1969).
8. *Leptocarabus (Adelocarabus) semiopacus* (Mt. Sobaeksan, GB, 23, VII, 1977).

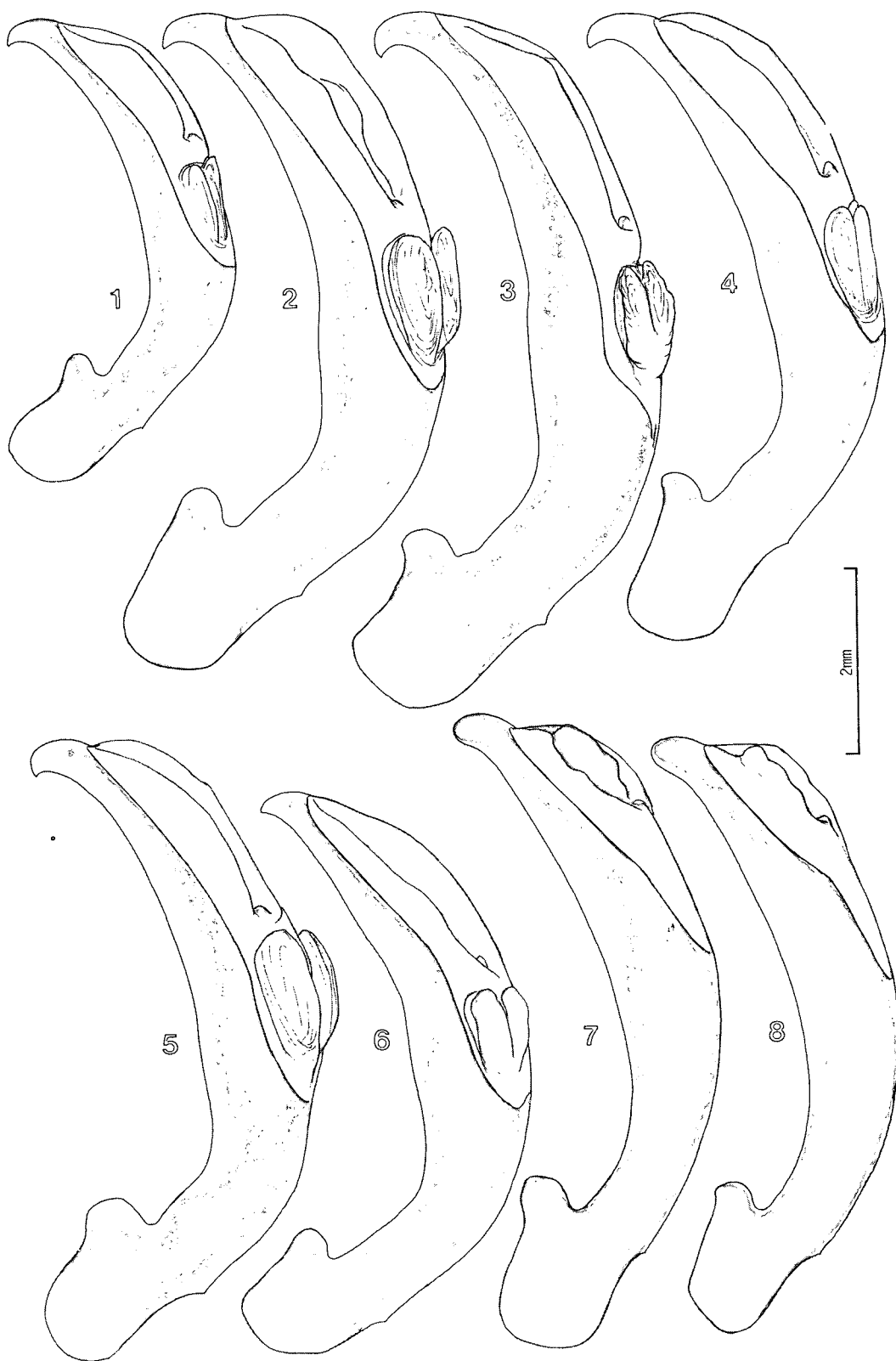


Plate XIV.

Aedeagi of carabids in lateral view (11).

1. *Leptocarabus (Adelocarabus) semiopacus* (Mt. Kyeryongsan, CN, 14, IX, 1975).
2. *Leptocarabus (Adelocarabus) semiopacus* (Mt. Hwanghaksan, GB, 29, IX, 1982).
3. *Leptocarabus (Adelocarabus) semiopacus* (Mt. P'algongsan, GB, 10, IX, 1982).
4. *Leptocarabus (Adelocarabus) semiopacus* (Mt. Tŏgyusan, JB, 22, VIII, 1977).
5. *Leptocarabus (Adelocarabus) semiopacus* (Mt. Chirisan, GN, 13, VII, 1981).
6. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Sŏlaksan, GW, 30, VII, 1982).
7. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Sogŭmgang, GW, 7, IX, 1980).
8. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Pangdaesan, GW, 28, VII, 1974).

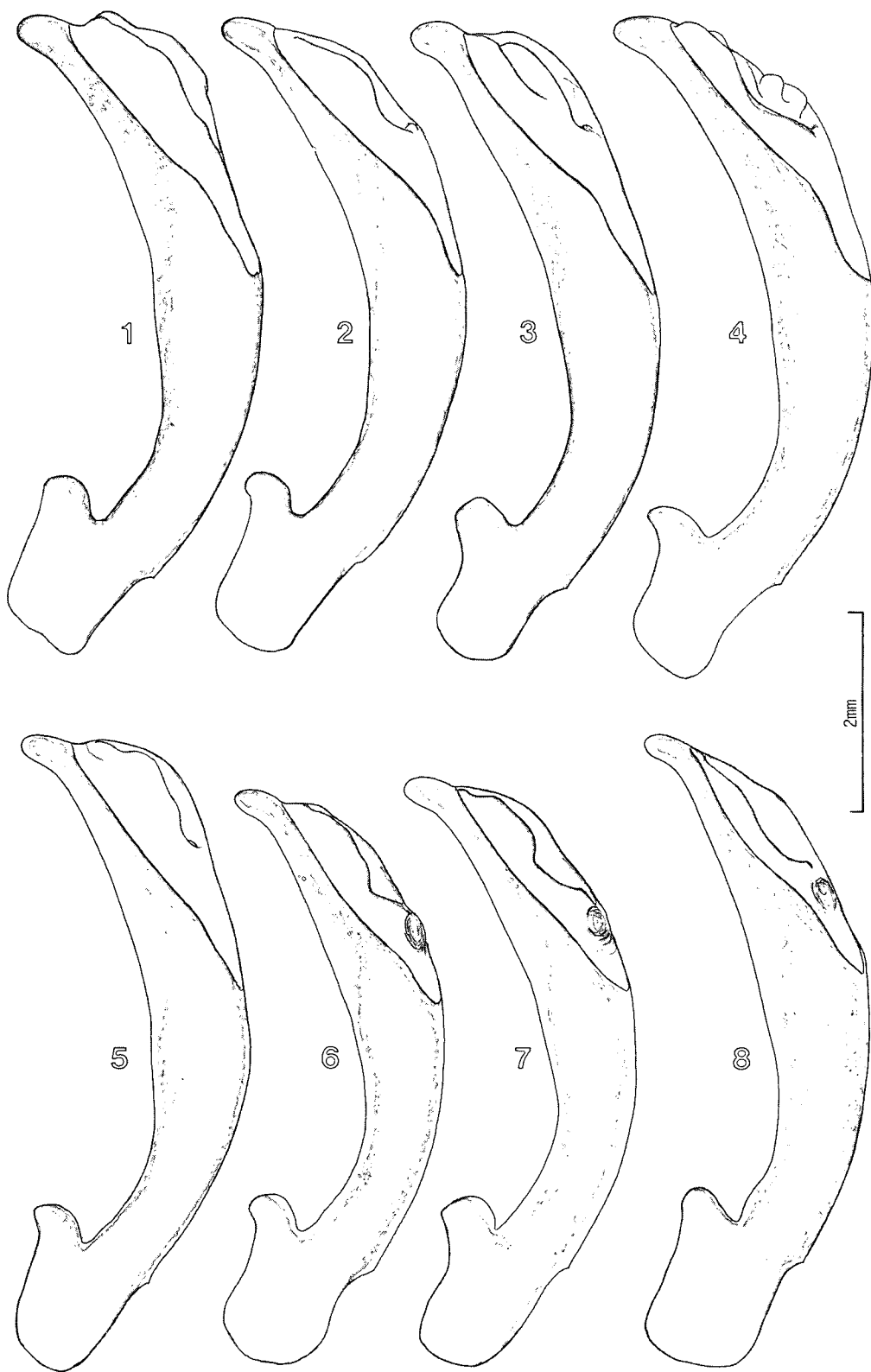


Plate XV.

Aedeagi of carabids in lateral view (12).

1. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Myōngjisan, GG, 7, VI, 1976).
2. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Pukhansan, GG, 12, VII, 1976).
3. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Tōgamsan, GG, 6, IX, 1976).
4. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Seoul, GG, 23, VIII, 1972).
5. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. T'aebaeksan, GW, 27, VI, 1976).
6. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. P'algongsan, GB, 3, IX, 1982).
7. *Leptocarabus (Adelocarabus) seishinensis seunglaki* subsp. nov. (Mt. Chirisan, GN, 13, VII, 1981).
8. *Leptocarabus (Adelocatabus) arboreus arboreus* (Aizankai, Mt. Daisetsuzan, Hokkaido, Japan, 12-15, VII, 1970).
9. *Leptocarabus (Adelocarabus) exilis babai* (Mt. Tenguharayama, Nagano Pref., Honshu, Japan, 15, IX, 1969).
10. *Leptocarabus (Astenocarabus) opaculus kurosawai* (Aizankai, Mt. Daisetsuzan, Hokkaido, Japan, 12-15, VII, 1970).
11. *Leptocarabus (Pentacarabus) harmandi okutamaensis* (Mt. Misutogeyama, Yamanashi Pref., Honshu, Japan 2, VI, 1971).

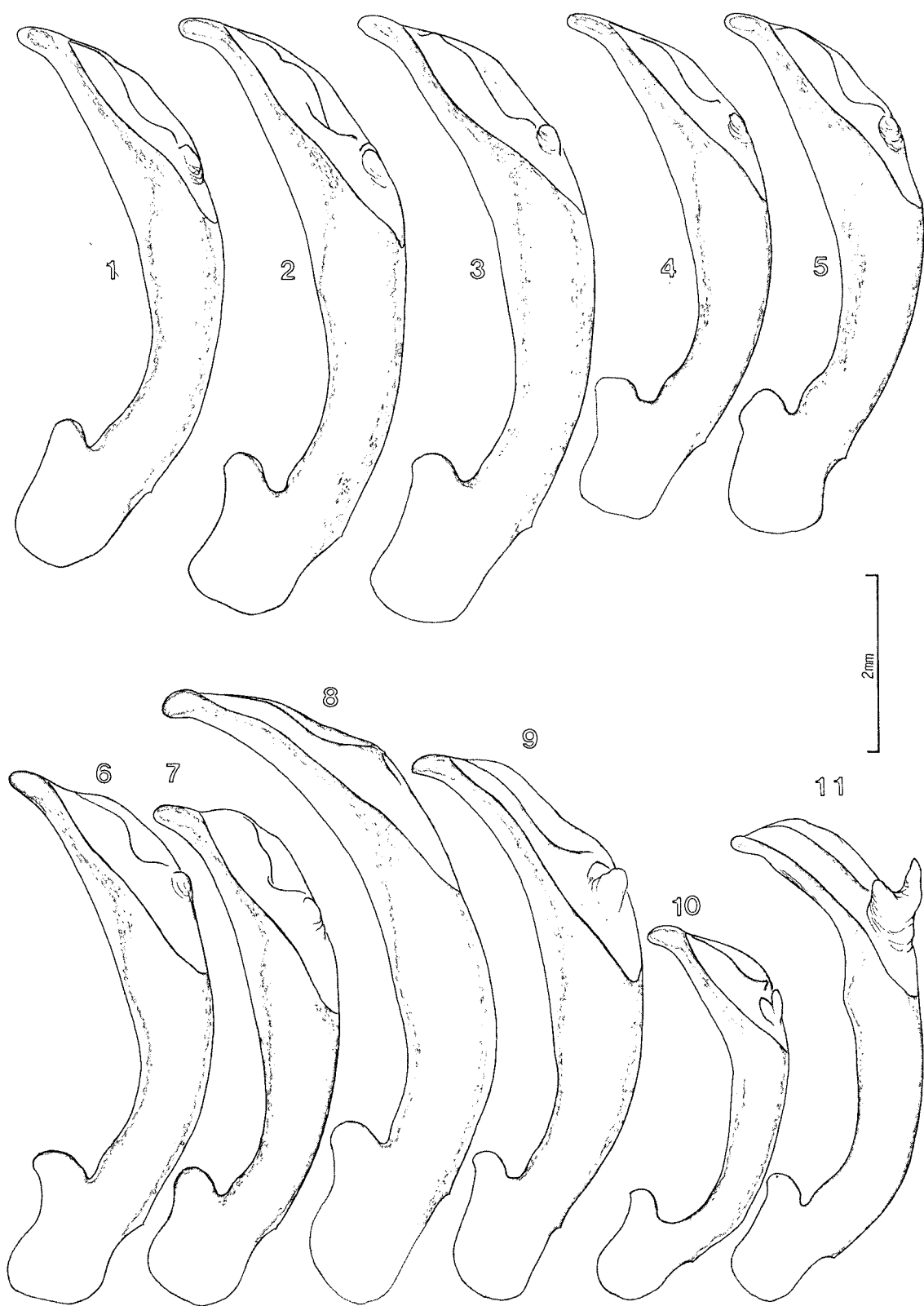


Plate XVI.

Aedeagi of carabids in lateral view (13).

1. *Hemicarabus* (s. str.) *tuberculosis* (Mt. Samnipsan, HB, ?, VI, 1930).
2. *Hemicarabus* (s. str.) *tuberculosis* (Mt. Hallasan, JJ, 18, VII, 1978).
3. *Hemicarabus* (s. str.) *tuberculosis* (Oiwake Pass, Hidaka, Hokkaido, Japan, 22, VIII, 1971).
4. *Hemicarabus* (s. str.) *macleayi coreensis* (Unsurŷong, HN, 28, VII, 1936).
5. *Hemicarabus* (*Homoeocarabus*) *maeander quelpartensis* subsp. nov. (Mt. Hallasan, JJ, 20, VI, 1968).
6. *Scambocarabus kruberi hallasanensis* subsp. nov. (Mt. Hallasan, JJ, 8, VI, 1972).
7. *Cathaicus brandti* (Shienhien, China, 15, VI, 1936).
8. *Procrustes coriaceus* (Munnes Tadter Wald, bei Kissingen, Unterfranken, Germany, 10, IX, 1976).

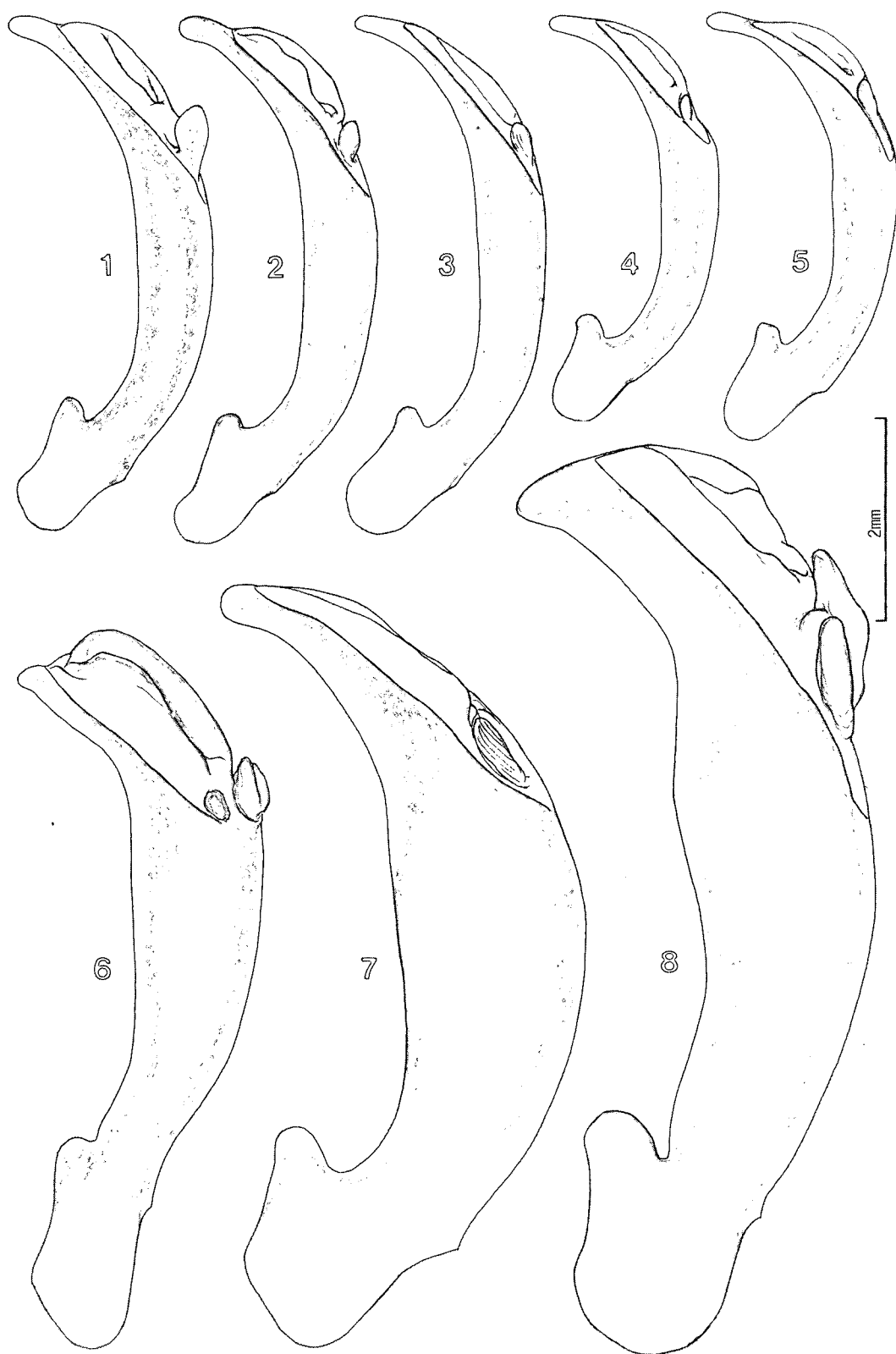


Plate XVII.

Aedeagi of carabids in lateral view (14).

1. *Tomocarabus fraterculus fraterculus* (Unsurŏng, HN, 16, VII, 1935).
2. *Tomocarabus fraterculus affinis* subsp. nov. (Mt. Sŏlaksan, GW, 29, VII, 1971).
3. *Tomocarabus fraterculus affinis* subsp. nov. (Mt. Odaesan, GW, 18, IX, 1982).
4. *Tomocarabus fraterculus affinis* subsp. nov. (Mt. Myŏngjisan, GG, 27, V, 1978).
5. *Tomocarabus fraterculus assimilis* subsp. nov. (Mt. T'aebaeksan, GW, 27, VI, 1976).
6. *Tomocarabus fraterculus assimilis* subsp. nov. (Mt. Sobaeksan, GB, 6, VI, 1981).
7. *Tomocarabus fraterculus assimilis* subsp. nov. (Mt. P'algongsan, GB, 24, V, 1983).
8. *Tomocarabus fraterculus yeongsiki* subsp. nov. (Mt. Chirisan, GN, 13, VII, 1981).

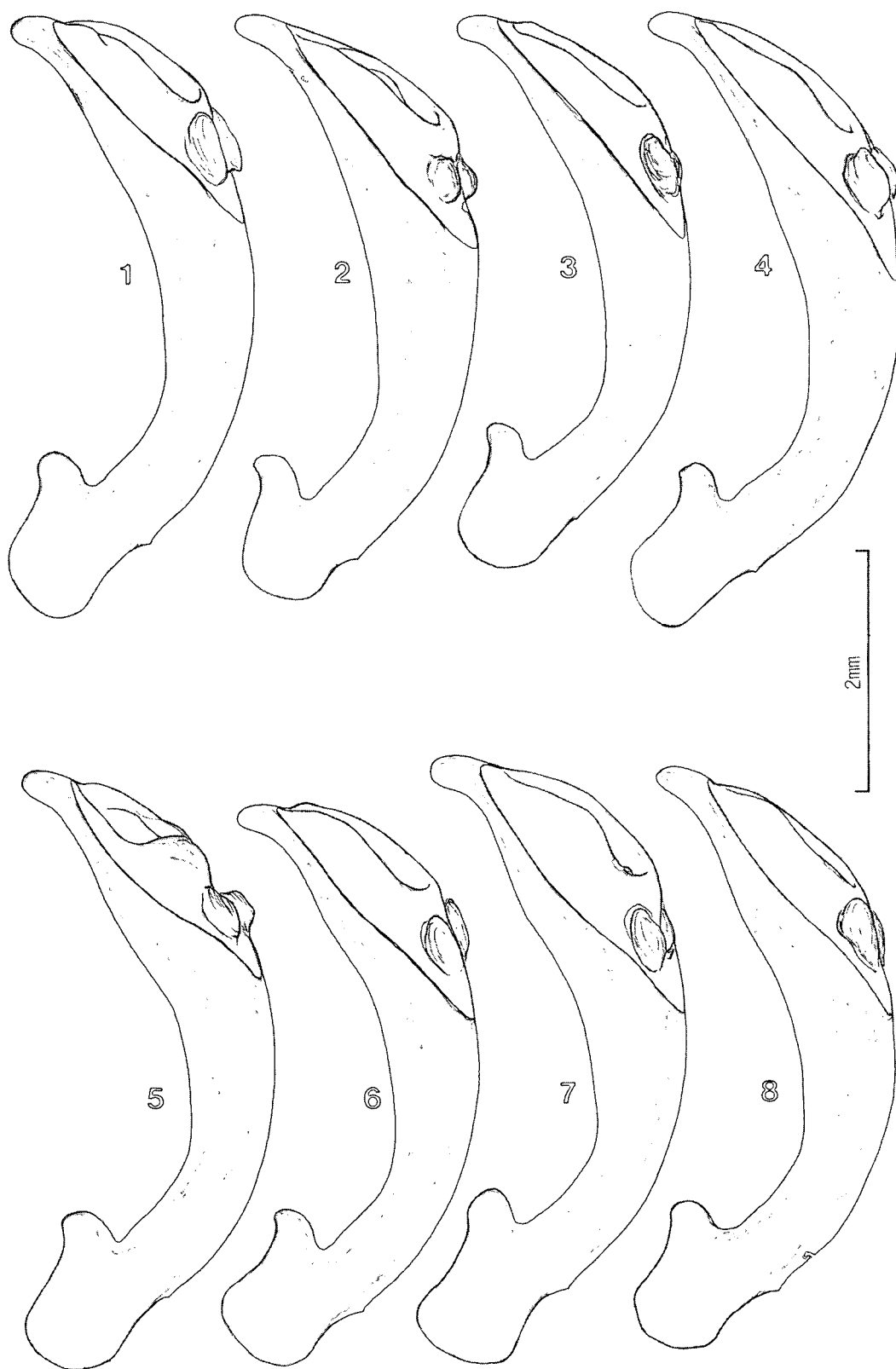
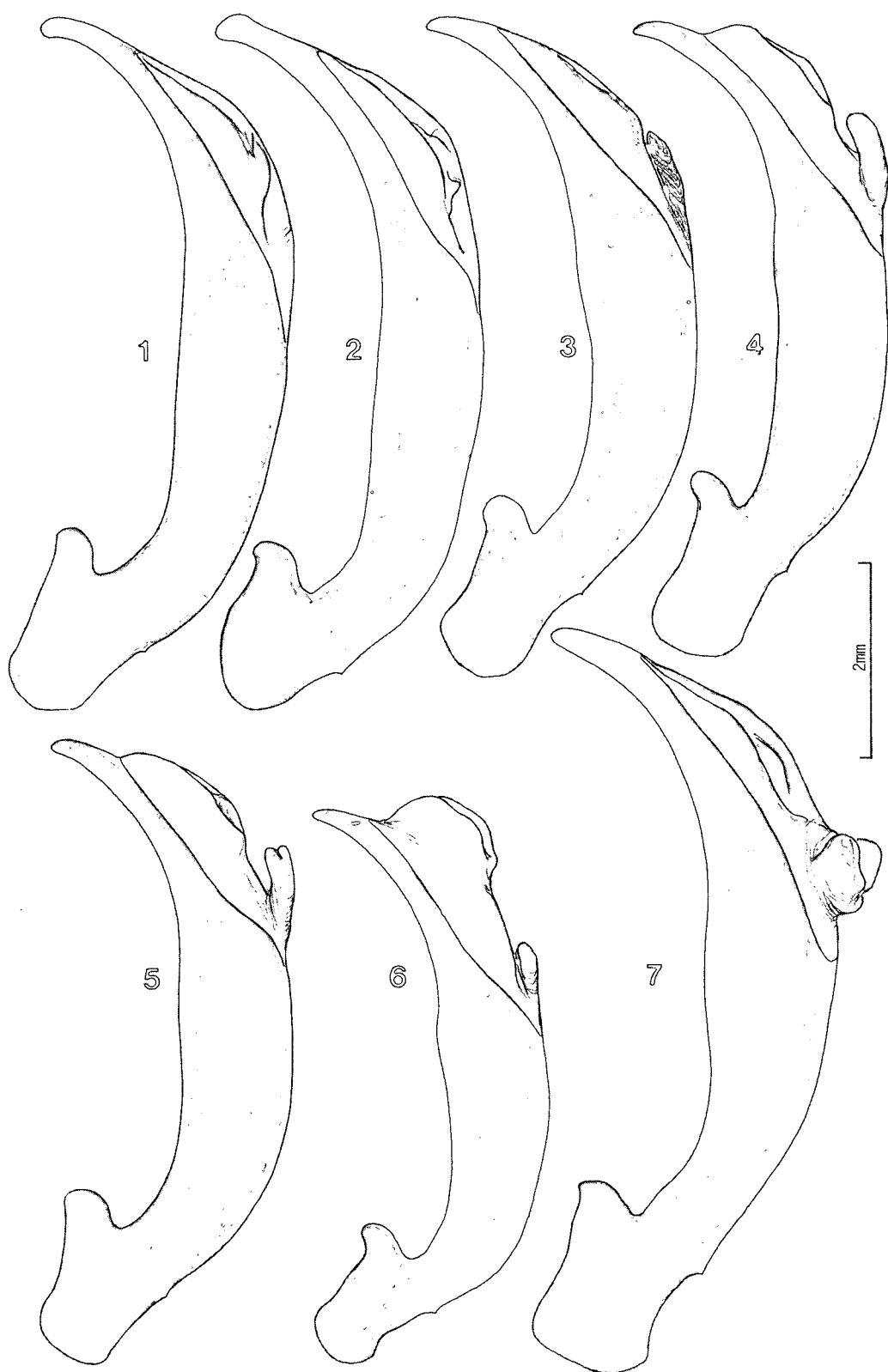


Plate XVIII.

Aedeagi of carabids in lateral view (15).

1. *Megodontus* (s. str.) *purpurascens crenatocostatus* (Bruxelle, Belgium, ?, VI, 1975).
2. *Megodontus* (s. str.) *violaceus candisatus* (Bayriseher Wald, Buchenau, Germany, 14, IX, 1975).
3. *Megodontus* (*Ainocarabus*) *kolbei kolbei* (Mt. Apoidake, Hidaka, Hokkaido, Japan, 26, VIII, 1971).
4. *Megodontus* (*Ainocarabus*) *kolbei aino* (Aizankei, Mt. Daisetsuzan, Hokkaido, Japan, 12-15, VII, 1970).
5. *Megodontus* (*Ainocarabus*) *kolbei kosugei* (Mt. Shakotandake, Shiribeshi, Hokkaido, Japan, 18-24, VIII, 1972).
6. *Megodontus* (*Ainocarabus*) *kolbei munakataorum* (Mt. Daisengen, Oshima, Hokkaido, Japan, 1, IX, 1971).
7. *Autocarabus auratus lotharingus* (Montpellier, France, 30, III, 1975).



## Plate XIX.

### Aedeagi of carabids in lateral view (16).

1. *Damaster (Koreacoptolabrus) constricticollis constricticollis* subgen. nov. (Mt. Odaesan, GW, 9, VIII, 1976).
2. *Damaster (Koreacoptolabrus) constricticollis constricticollis* subgen. nov. (Mt. T'aebaeksan, GW, 28, VI, 1976).
3. *Damaster (Koreacoptolabrus) constricticollis chiricola* subgen. et subsp. nov. (Mt. Chirisan, GN, 6, VI, 1983).
4. *Damaster (Koreacoptolabrus) mirabilissimus* subgen. nov. (Mt. T'aebaeksan, GW, 27, VI, 1976).
5. *Damaster (Koreacoptolabrus) mirabilissimus* subgen. nov. (Mt. Sobaeksan, GB, 24, VII, 1977).
6. *Damaster (Acoptolabrus) gehini gehini* (Jyozankei, Sapporo, Hokkaido, Japan, 24, VI, 1979).
7. *Damaster (Acoptolabrus) gehini radiatocostatus* Oiwake Pass, Hidaka, Hokkaido, Japan, 27-30, VIII, 1972).
8. *Damaster (Acoptolabrus) gehini sapporensis* (Apoidake, Hidaka, Hokkaido, Japan, 5-8, VIII, 1970).
9. *Damaster (Acoptolabrus) gehini munakatai* (Mt. Daisengendake, Hokkaido, Japan, 19-23, VIII, 1973).

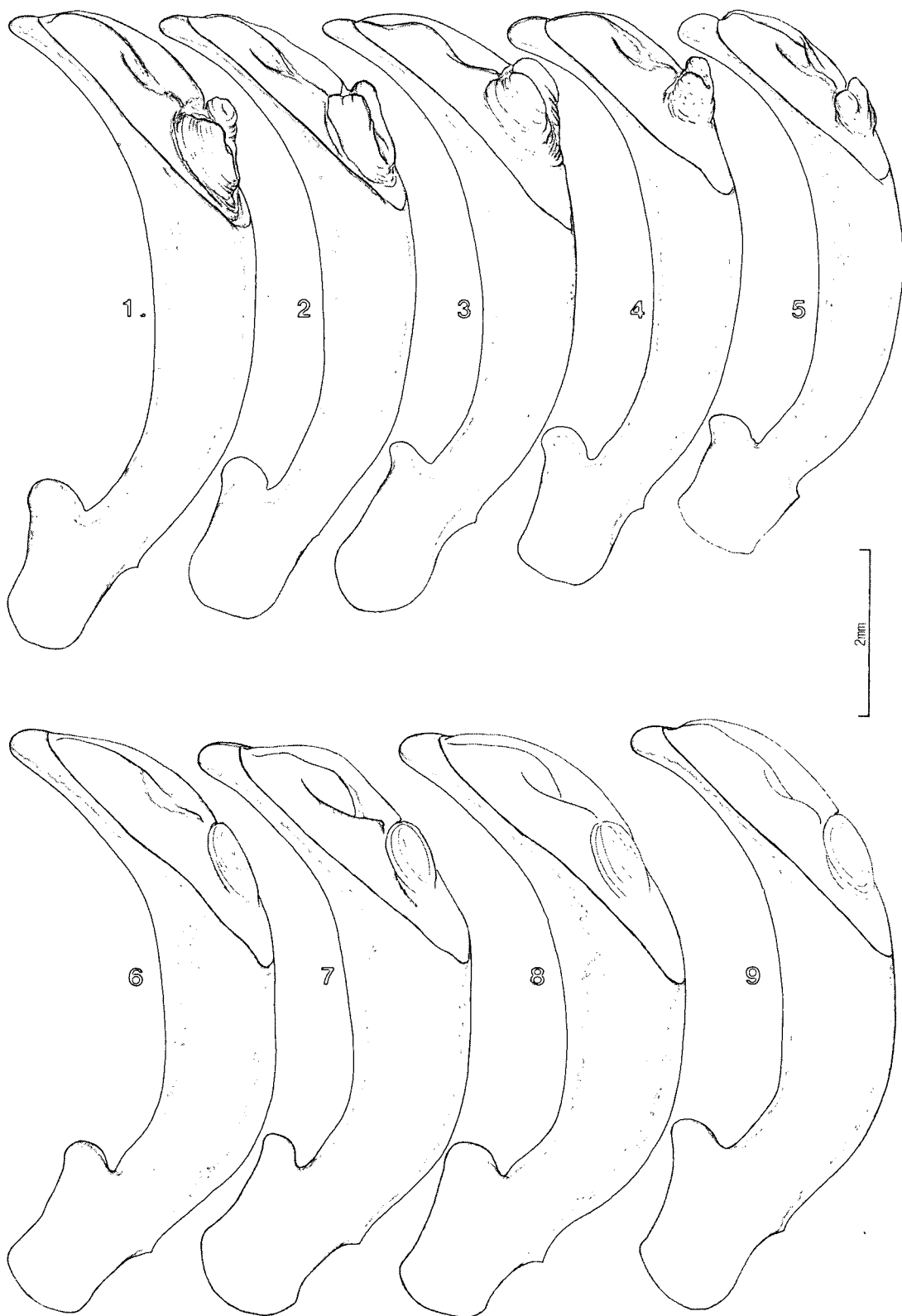


Plate XX.

Aedeagi of carabids in lateral view (17).

1. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Sŏlaksan, GW, 5, VIII, 1969).
2. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Pangdaesan, GW, 27, VII, 1974).
3. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Wangbangsan, GG, 6, VIII, 1976).
4. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Myŏngjisan, GG, 27, V, 1978).
5. *Damaster (Coptolabrus) jankowskii jankowskii* (Kwangnŭng, GG, 15, VIII, 1971).
6. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Aengmubong, GG, 15, VI, 1976).
7. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Pukhansan, GG, 11, VII, 1976).
8. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Tobongsan, GG, 19, VIII, 1976).

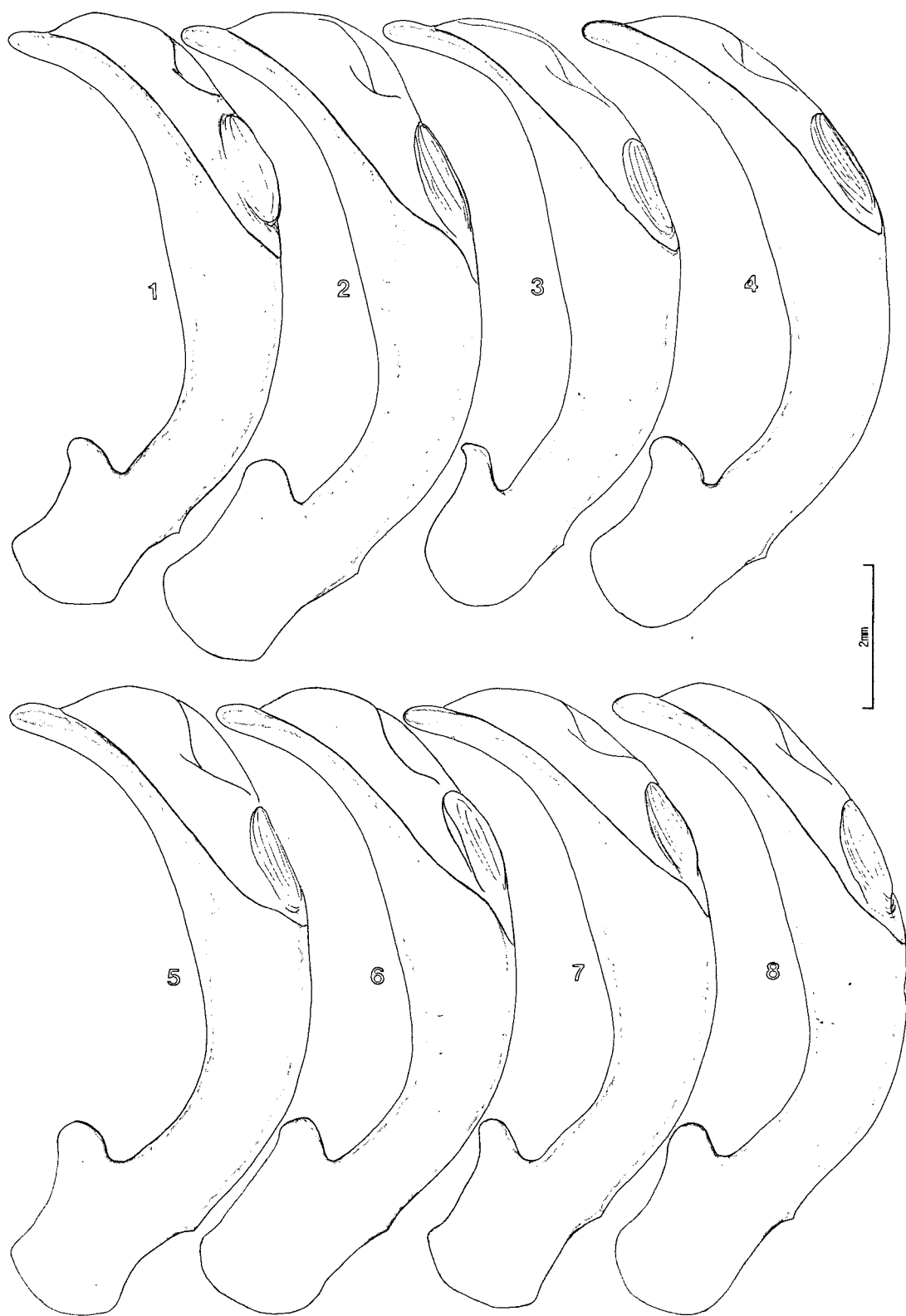


Plate XXI.

Aedeagi of carabids in lateral view (18).

1. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Tōgamsan, GG, 6, IX, 1976).
2. *Damaster (Coptolabrus) jankowskii jankowskii* (Konjiam, GG, 1, VIII, 1976).
3. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Yongmunsan, GG, 14, IX, 1980).
4. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Ch'iaksan, GW, 14, VI, 1976).
5. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Sobaeksan, GB, 23, VII, 1977).
6. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Kyeryongsan, CN, 14, IX, 1979).
7. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Songnisan, CB, 10, VI, 1977).
8. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. P'algongsan, GB, 10, IX, 1982).

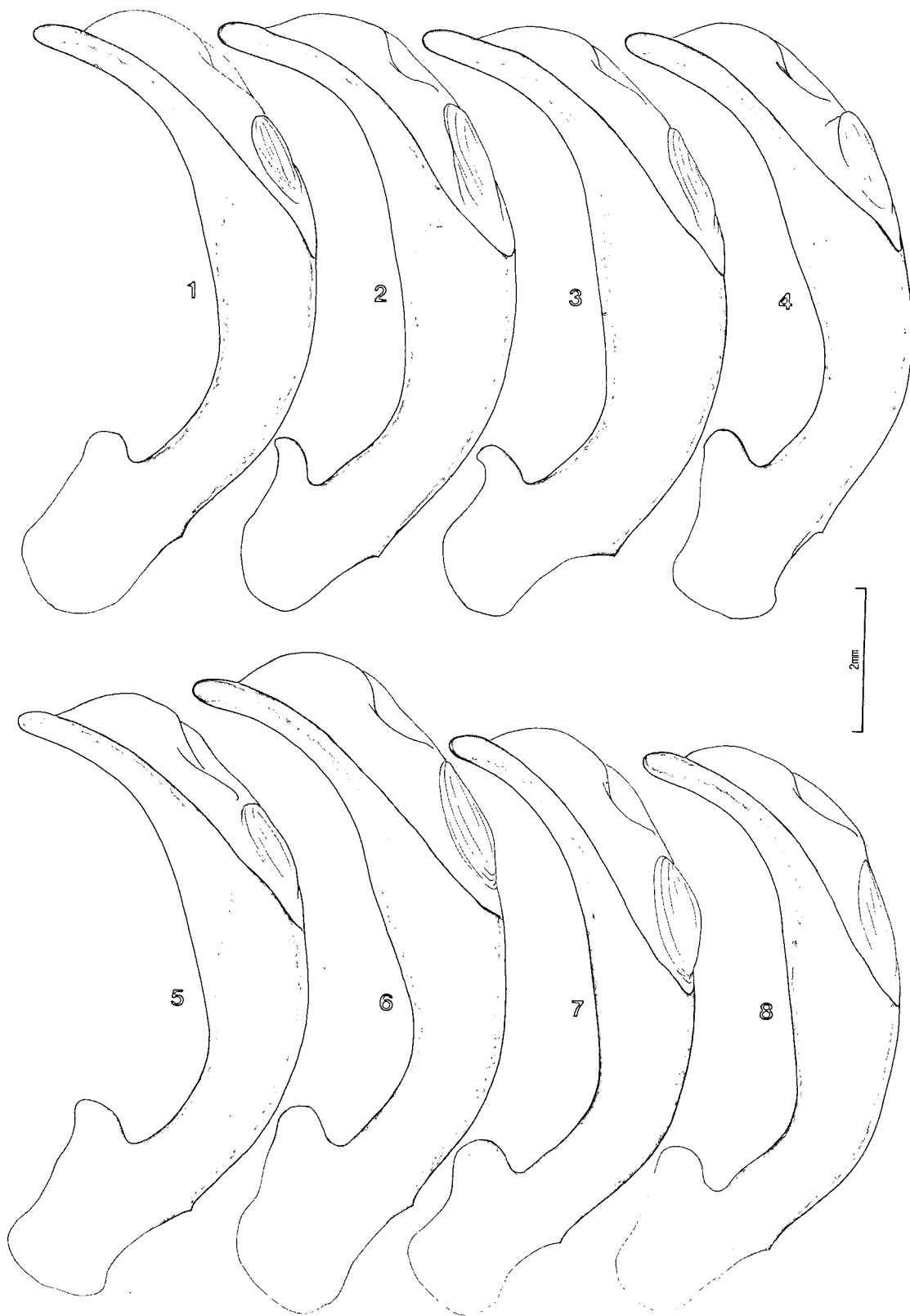


Plate XXII.

Aedeagi of carabids in lateral view (19).

1. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. T'ohamsan, GB, 22, IX, 1982).
2. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Chogyesan, JN, 5, VI, 1983).
3. *Damaster (Coptolabrus) jankowskii kangwonensis* subsp. nov. (Mt. Odaesan, GW, 9, VIII, 1976).
4. *Damaster (Coptolabrus) jankowskii kangwonensis* subsp. nov. (Mt. T'aebaeksan, GW, 27, VI, 1976).
5. *Damaster (Coptolabrus) jankowskii elegans* subsp. nov. (Mt. Chirisan, GN, 12, VI, 1983).
6. *Damaster (Coptolabrus) jankowskii fusanus* (Pusan, GN, 3, VI, 1977).
7. *Damaster (Coptolabrus) jankowskii kojensis* (Is. Kōjedo, GN, 22-31, VII, 1969).
8. *Damaster (Coptolabrus) jankowskii kojensis* (Is. Namhaedo, GN, 13, VI, 1977).

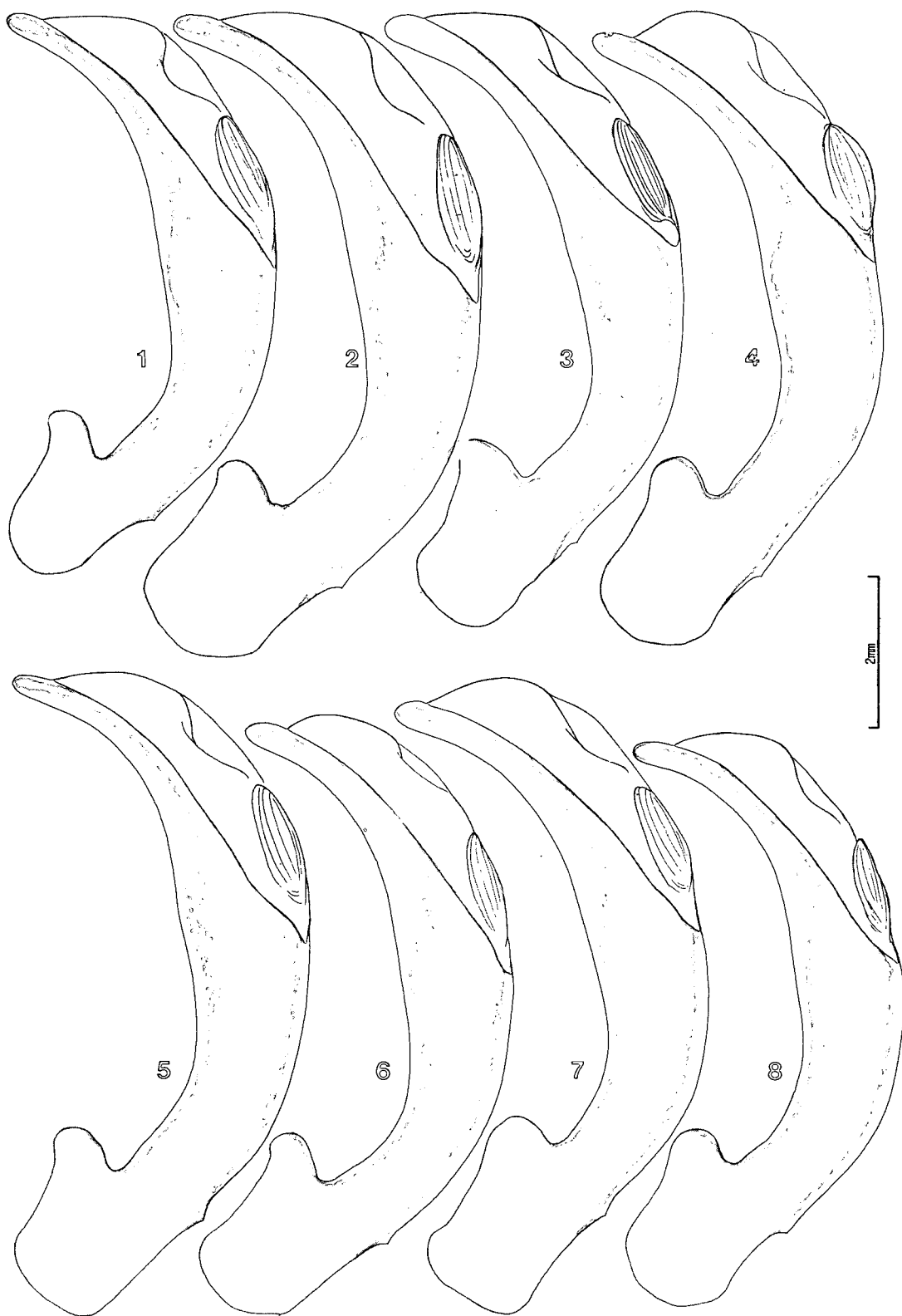


Plate XXIII.

Aedeagi of carabids in lateral view (20).

1. *Damaster (Coptolabrus) jankowskii quelpartianus* (Mt. Hallasan, JJ, 22, VI, 1976).
2. *Damaster (Coptolabrus) fruhstorferi* (Mt. Mitake, Is. Tsushima, Nagasaki Pref., Japan, 27, IV, 1972).
3. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Kŭmgangsan, GW, ?, VIII, 1935).
4. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Sŏlaksan, GW, 12, VIII, 1969).
5. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Odaesan, GW, 9, VIII, 1976).
6. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Pangdaesan, GW, 30, VII, 1974).
7. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Yongmunsan, GG, 14, IX, 1980).
8. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. T'aebaeksan, GW, 28, VI, 1976).

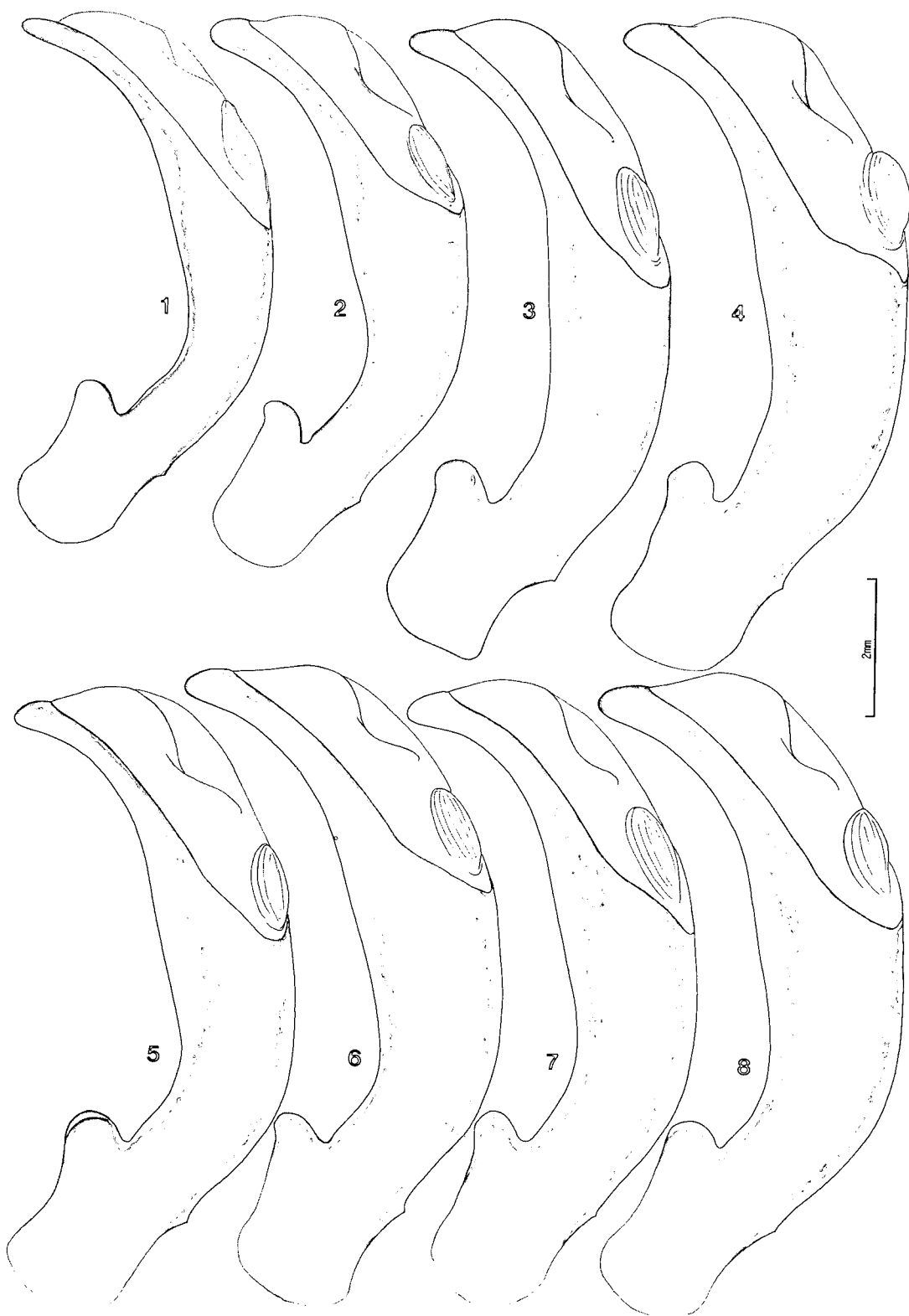


Plate XXIV.

Aedeagi of carabids in lateral view (21).

1. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Sobaeksan, GB, 24, VII, 1977).
2. *Damaster (Coptolabrus) smaragdinus branickii* (Kwangnŭng, GG, 3, IX, 1971).
3. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Tobongsan, GG, 19, VIII, 1976).
4. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Ch'ŏnmasan, GG, 9, IX, 1980).
5. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Wangbangsan, GG, 9, VIII, 1976).
6. *Damaster (Coptolabrus) smaragdinus branickii* (Konjam, GG, 6, IX, 1976).
7. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Ch'iaksan, GW, 2, VIII, 1982).
8. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Kyeryongsan, CN, 14, IX, 1975).

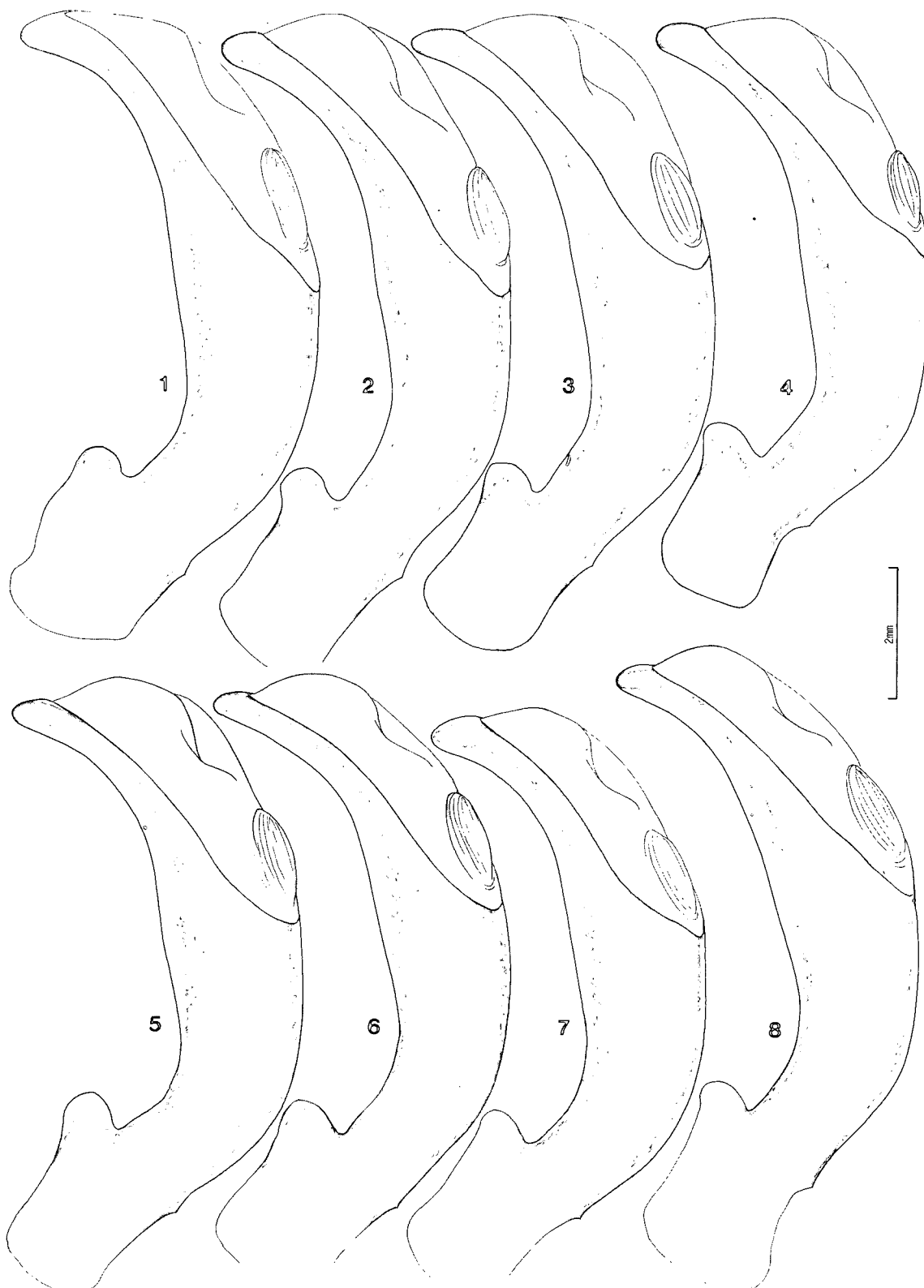


Plate XXV.

Aedeagi of carabids in lateral view (22).

1. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Songnisan, CB, 10, VI, 1977).
2. *Damaster (Coptolabrus) smaragdinus branickii* (Koesan, CB, 28, VII, 1978).
3. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. P'algongsan, GB, 24, V, 1983).
4. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. T'ohamsan, GB, 22, IX, 1982).
5. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Yŏngch'wisan, GN, 2, VI, 1983).
6. *Damaster (Coptolabrus) smaragdinus branickii* (Hamyang, GN, 31, VII, 1980).
7. *Damaster (Coptolabrus) smaragdinus branickii* (Sanin Myŏn, GN, 28, V, 1983).
8. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Muhaksan, GN, 24, IX, 1982).

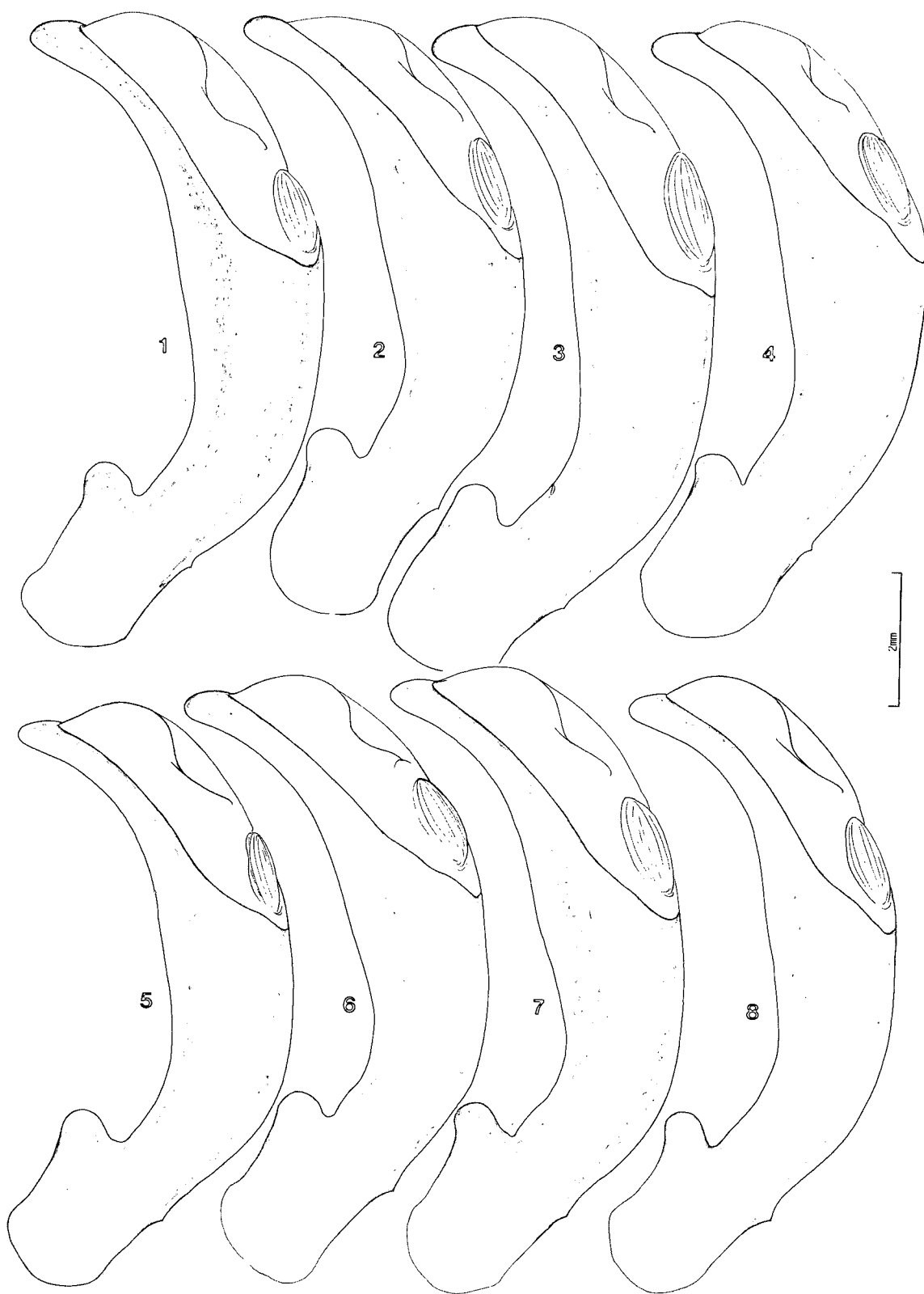


Plate XXVI.

Aedeagi of carabids in lateral view (23).

1. *Damaster (Coptolabrus) smaragdinus branickii* (Is. Kōjedo, GN, 16-20, VII, 1970).
2. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Naejangsan, JB, 6, VI, 1968).
3. *Damaster (Coptolabrus) smaragdinus branickii* (Koch'ang, JB, 31, V, 1973).
4. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Yudalsan, JN, 19, VI, 1976).
5. *Damaster (Coptolabrus) smaragdinus hongdoensis* subsp. nov. (Is. Hongdo, JN, 10, VIII, 1981).
6. *Damaster (Coptolabrus) smaragdinus sangjaei* subsp. nov. (Mt. Chirisan, GN, 6, VI, 1983).
7. *Damaster (Coptolabrus) smaragdinus hoenggandoensis* subsp. nov. (Is. Hoenggando, JJ, 4, VIII, 1970).
8. *Damaster (Coptolabrus) smaragdinus monilifer* (Mt. Hallasan, JJ, 29, VII, 1978).

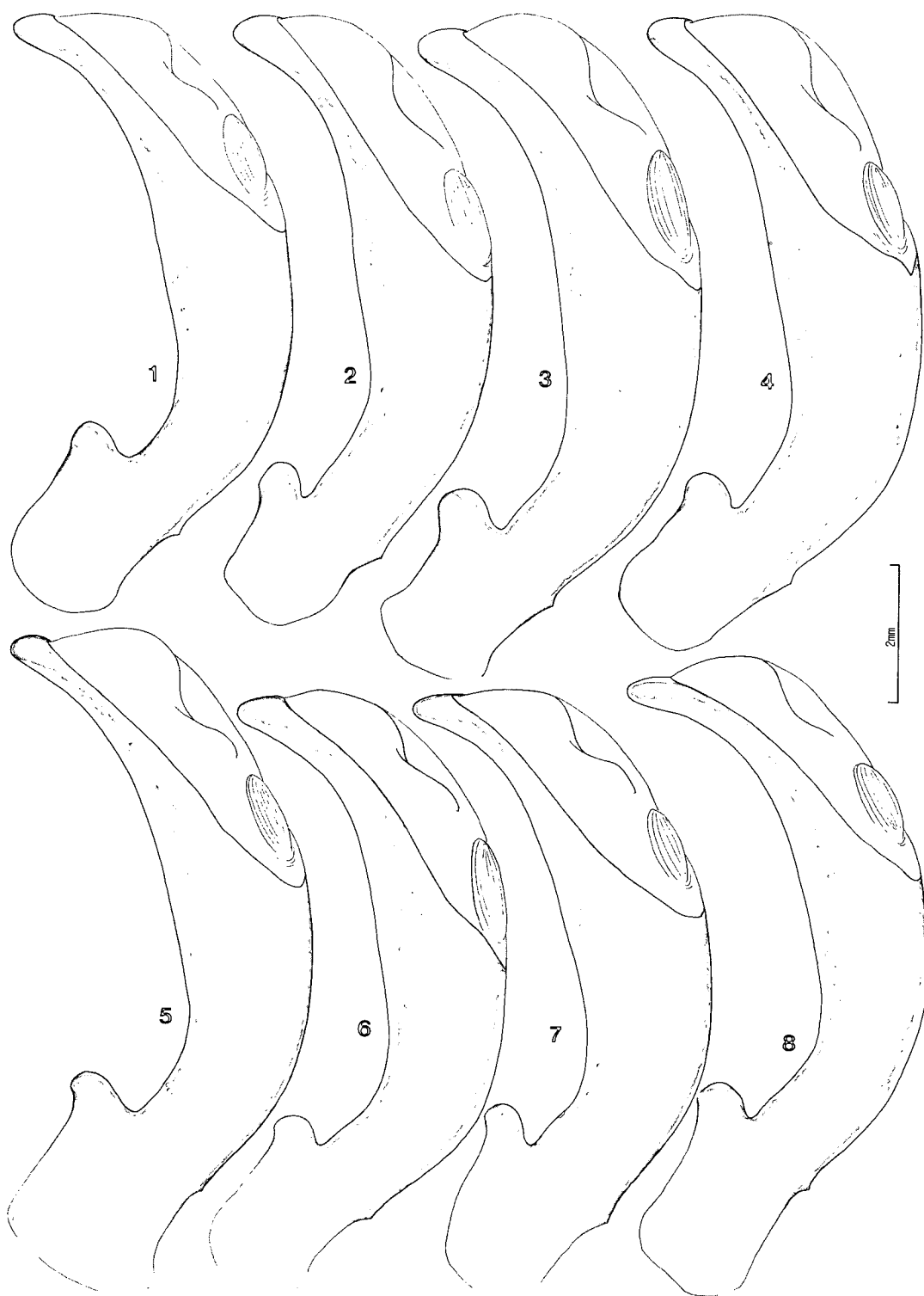


Plate XXVII.

Aedeagi of carabids in lateral view (24).

1. *Damaster* (s. str.) *blaptoides rugipennis* (Asahigawa, Hokkaido, Japan, 8, VII, 1977).
2. *Damaster* (s. str.) *blaptoides capito* (Mt. Kinpokusan, Is. Sado, Niigata Pref., Honshu, Japan, 2-5, III, 1971).
3. *Damaster* (s. str.) *blaptoides fortunei* (Is. Awashima, Niigata Pref., Honshu, Japan, 31, III, 1970).
4. *Damaster* (s. str.) *blaptoides oxuroides* (Kizoro, Saitama Pref., Honshu, Japan, ?, III, 1968).
5. *Damaster* (s. str.) *blaptoides montanus* (Mt. Adatarasan, Fukushima Pref., Honshu, Japan, 8, IV, 1970).
6. *Cychrus morawitzi* (Mt. Apoidake, Hidaka, Hokkaido, Japan, 26, VIII, 1971).

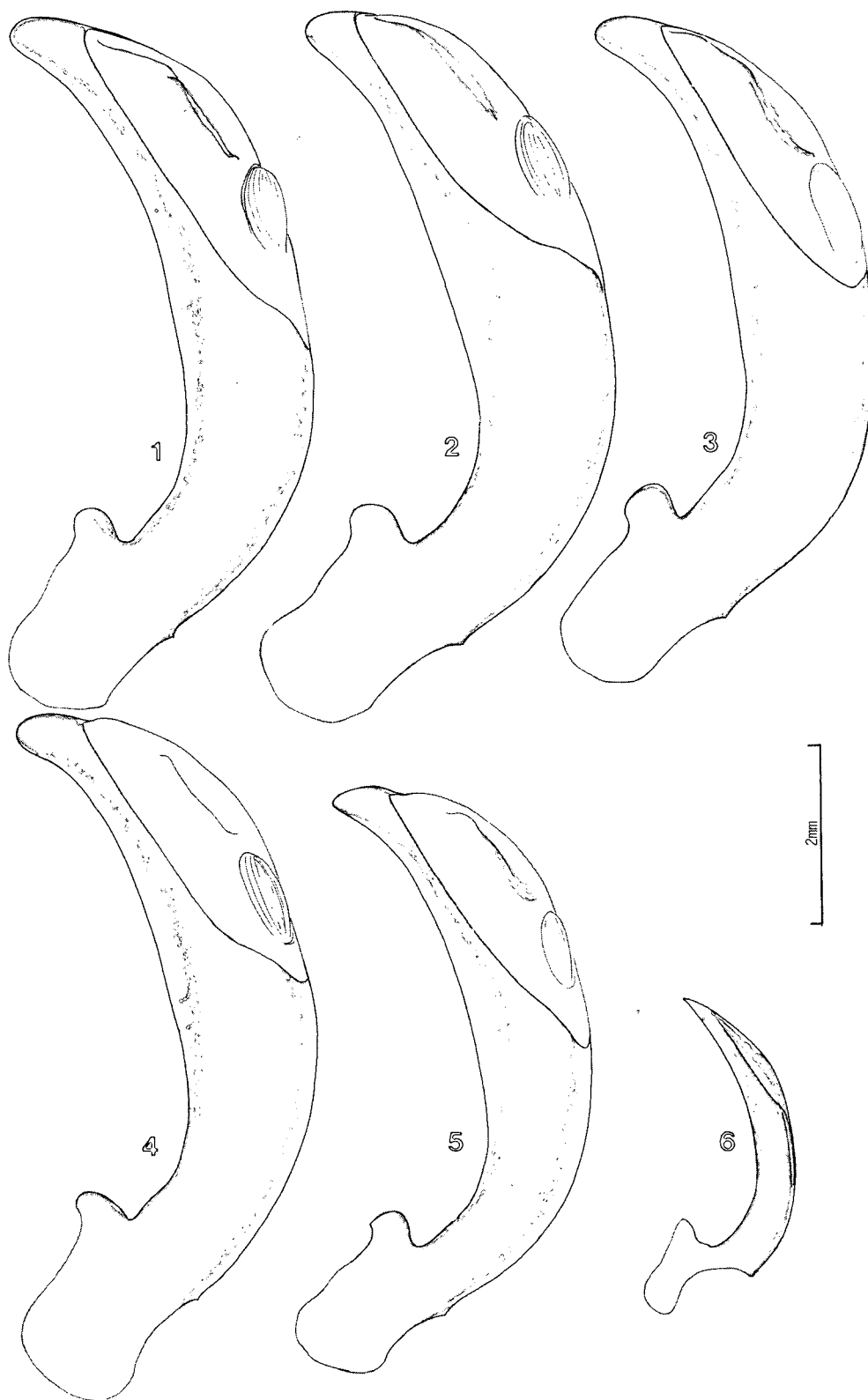
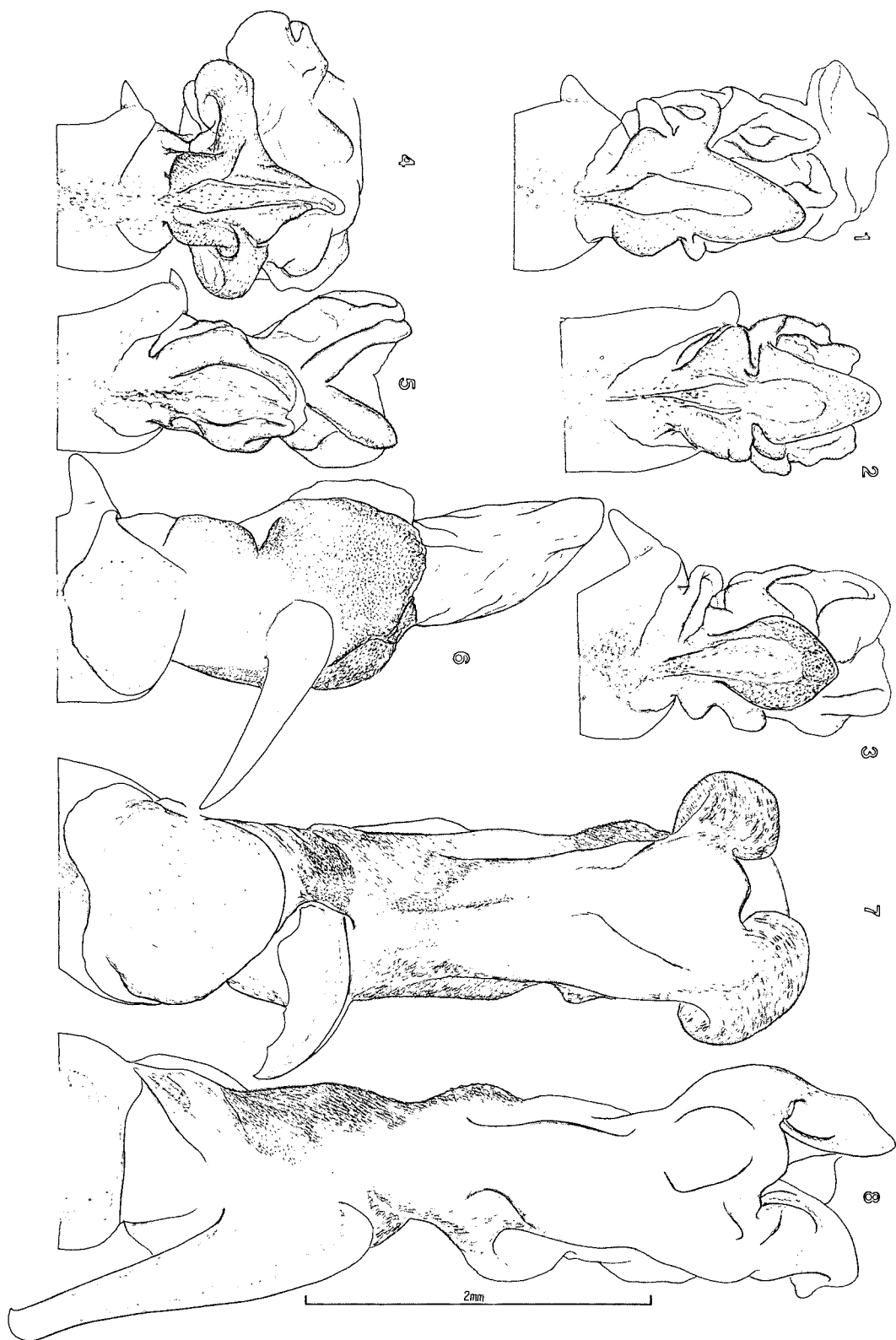


Plate XXVIII.

Endophalli of carabids (1).

1. *Calosoma maximowiczi* (Mt. Ch'ŏnmasan, GG, 28, V, 1972).
2. *Calosoma maximowiczi* (Mt. Hallasan, JJ, 30, VII, 1972).
3. *Calosoma inquisitor cyanescens* (Nanam, HB, 10, VI, 1929).
4. *Charmosta lugens* (Ch'ŏngjin, HB, ?, VIII, 1929).
5. *Campalita chinense* (Seoul, GG, 14, VIII, 1971).
6. *Apotomopterus* (*Limnocarabus*) *clathratus aquatilis* comb. nov. (Chikauchi, Miyako City, Honshu, Japan, 30, VIII, 1973).
7. *Apotomopterus* (*Euleptocarabus*) *porrecticollis* (Mt. Sotoyama, Nikko, Tochiki Pref., Honshu, Japan, 3, XI, 1969).
8. *Apotomopterus* (s. str.) *sauteri* (Tengchih, Kaoshunsien, Taiwan, ?, VIII, 1975).



## Plate XXIX.

### Endophalli of carabids (2)

1. *Carabus* (s. str.) *granulatus granulatus* (Kissingen, Unterfranken, Germany, 1, III, 1976).
2. *Carabus* (s. str.) *granulatus ussuriensis* (Mt. Kwanmobong, HB, 18, VII, 1932).
3. *Carabus* (s. str.) *granulatus telluris* (Fukushimagata, Tsukioka Pref., Honshu, Japan, 31, III, 1969).
4. *Carabus* (s. str.) *granulatus yezoensis* (Kawayu, Kushiro, Hokkaido, Japan, 10, VII, 1969).
5. *Carabus* (*Eutelocarabus*) *arvensis germaniae* (Hoffenheim, Gr. Wald, Germany, ?, VI, 1974).
6. *Carabus* (*Eutelocarabus*) *conciliator faldermanni* (Seoul, GG, ?, VII, 1961).
7. *Carabus* (*Eutelocarabus*) *conciliator hokkaidensis* (Mt. Apoidake, Hidaka, Hokkaido, Japan, 5-9, VIII, 1970).

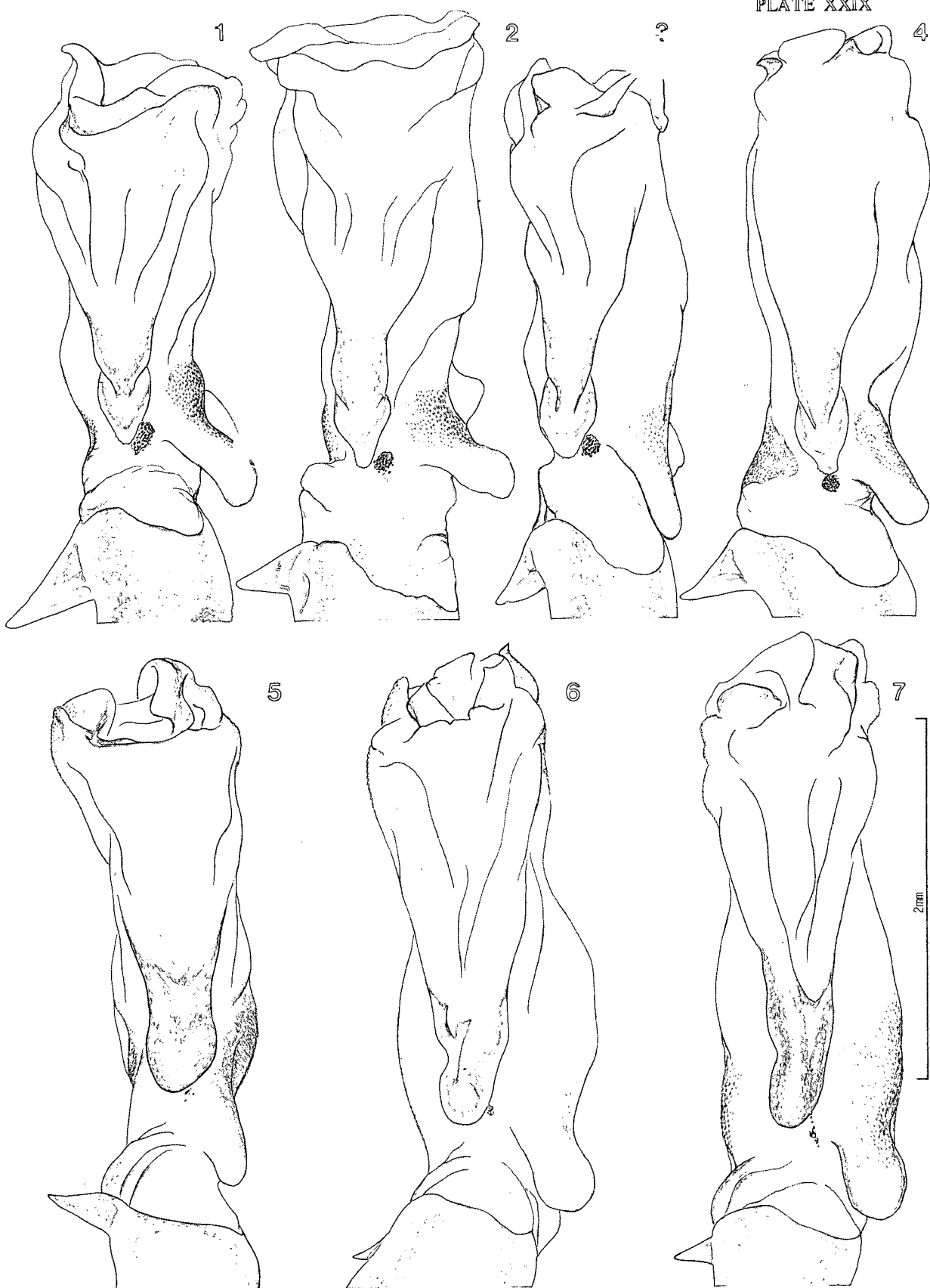


Plate XXX.

Endophalli of carabids (3).

1. *Carabus (Isiocarabus) fiduciarius saishutoicus* (Mt. Hallasan, JJ, 28, VII, 1978).
2. *Carabus (Ohomopterus) dehaanii dehaanii* (Mt. Hieizan, Kyoto Pref., Honshu, Japan, 15, I, 1967).
3. *Carabus (Ohomopterus) japonicus japonicus* (Mt. Sobozan, Ohita Pref., Kyushu, Japan, 29, XII, 1969).
4. *Carabus (Ohomopterus) esakii* (Izu Peninsula, Shizuoka Pref., Honshu, Japan, 20, XII, 1973).

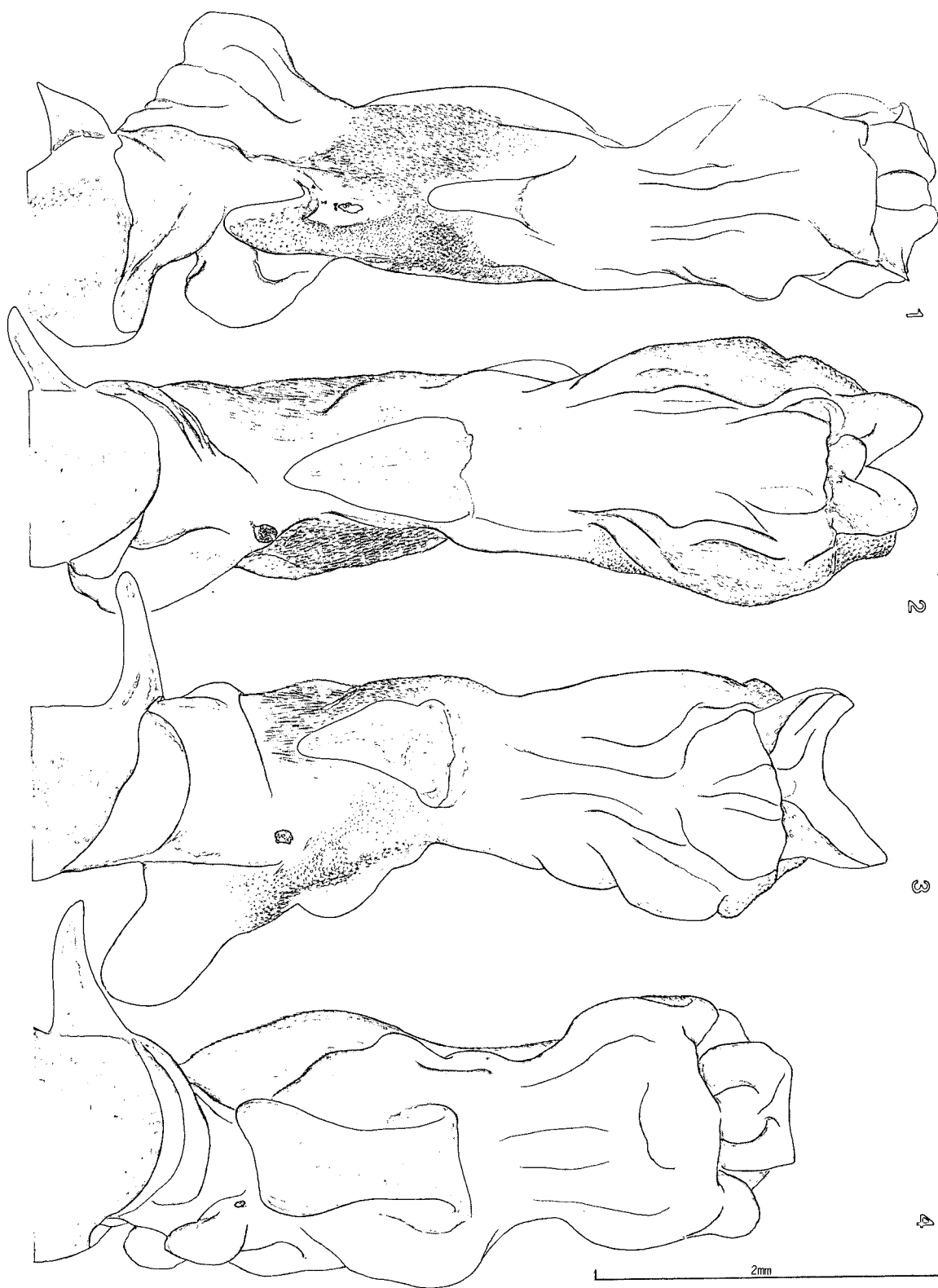


Plate XXXI.

Endophalli of carabids (4).

1. *Carabus (Ohomopterus) yaconinus yaconinus* (Mt. Hanataka, Shimane Pref., Honshu, Japan, 20, III, 1969).
2. *Carabus (Ohomopterus) insulicola insulicola* (Kizoro, Saitama Pref., Honshu, Japan, ?, II, 1968).
3. *Carabus (Ohomopterus) uenoi* (Mt. Katsurisan, Nara Pref., Honshu, Japan, 30, V, -4, VI, 1975).
4. *Carabus (Eucarabus) ullrichi ullrichi* (Slov., Lipt., Osada, Czechoslovakia, ?, VIII, 1968).

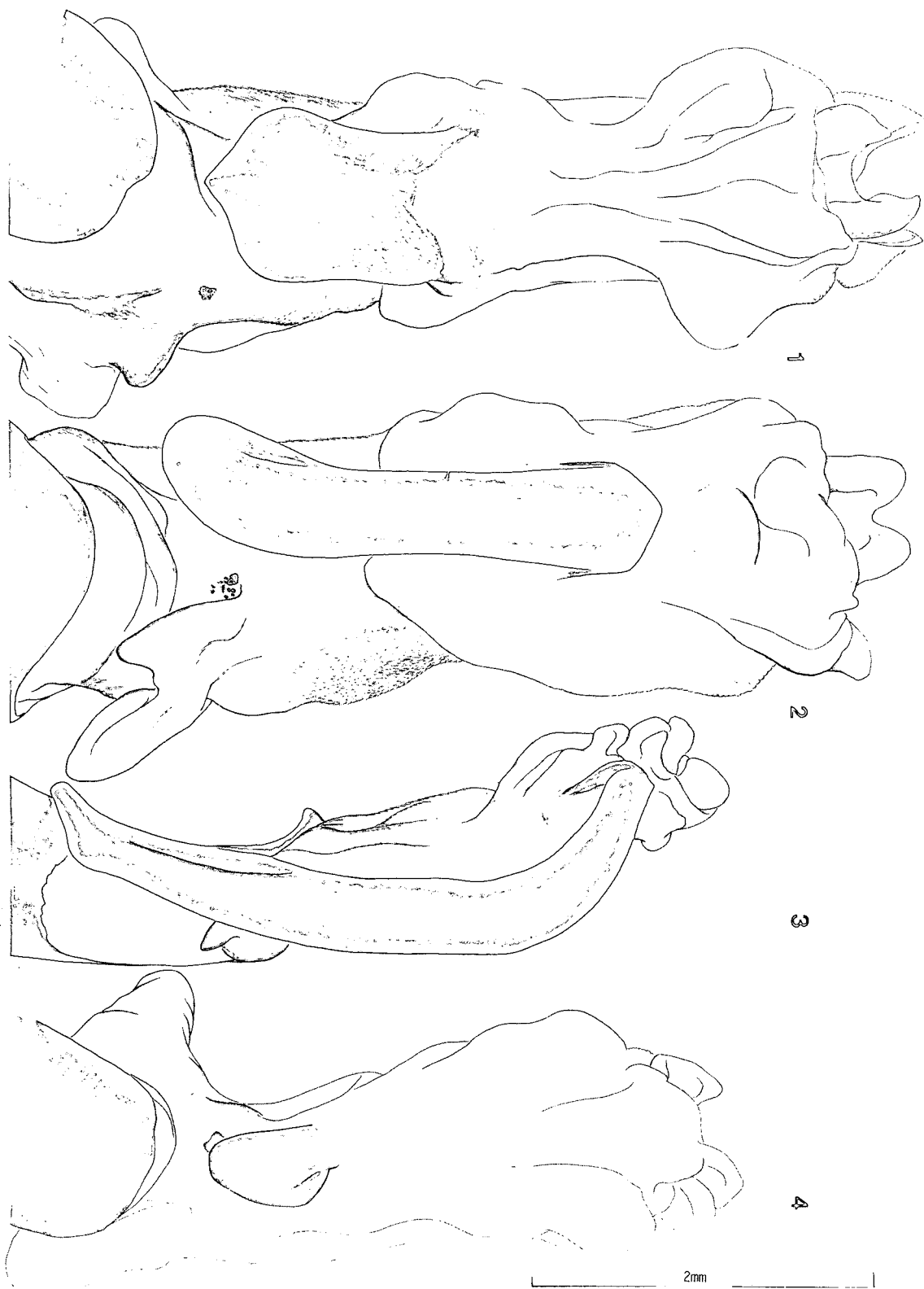


Plate XXXII.

Endophalli of carabids (5)

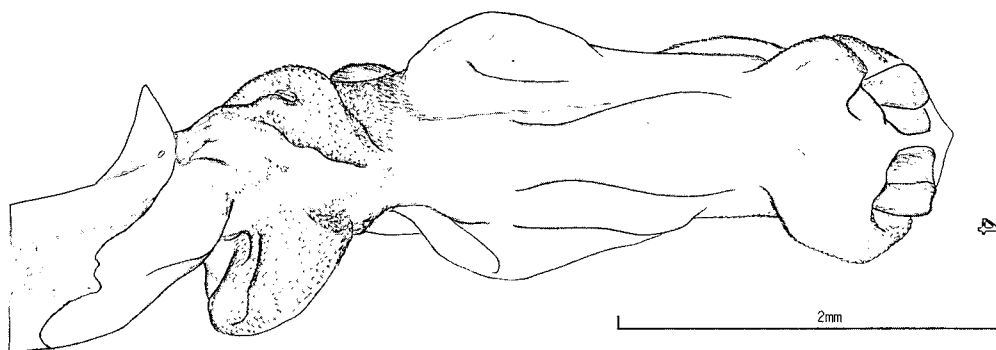
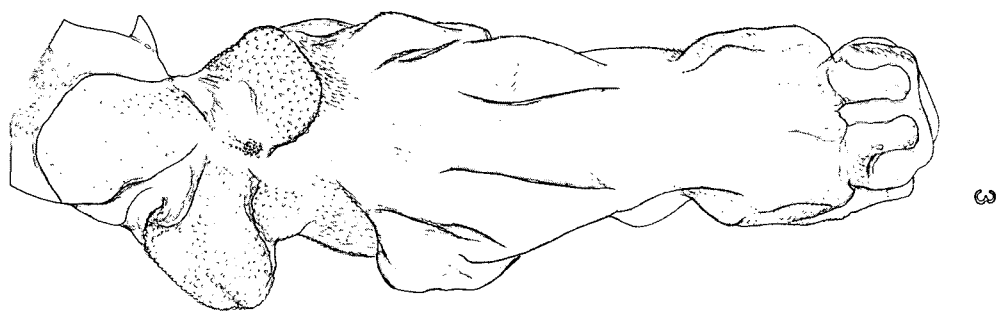
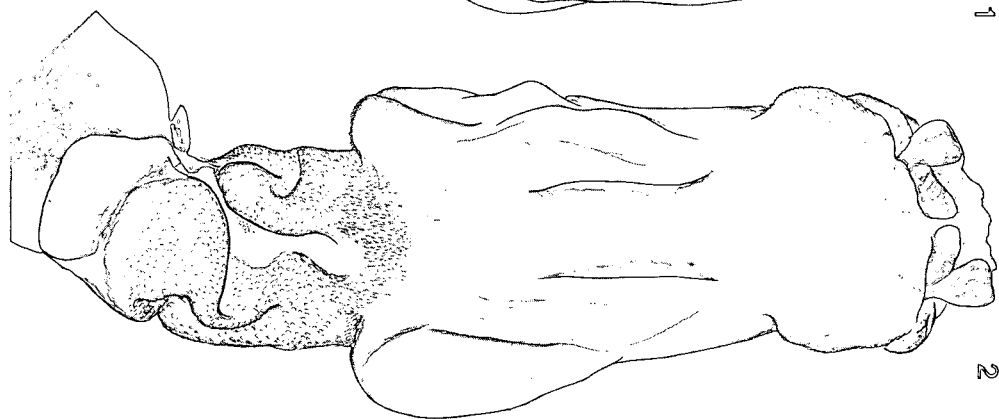
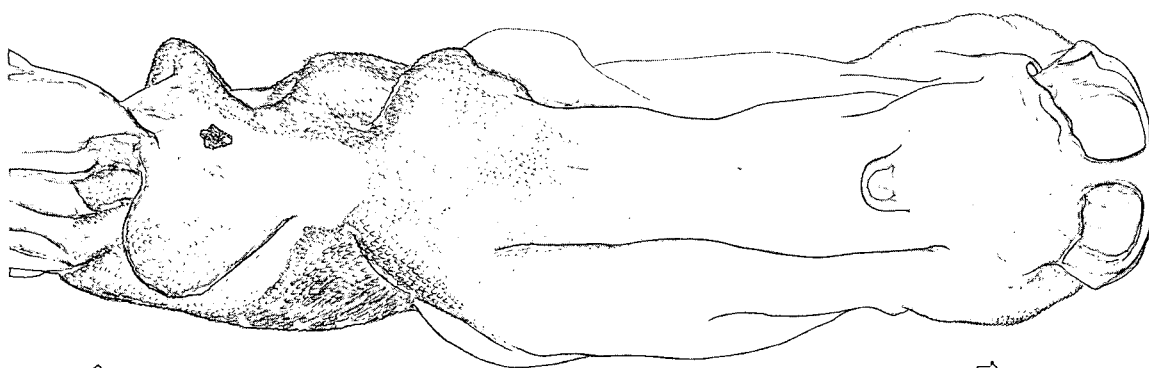
1. *Carabus (Parhomopterus) sternbergi cartereti* (Mt. Sólaksan, GW, 27, VII, 1982).
2. *Carabus (Parhomopterus) namhaedoensis* sp. nov. (Mt. Kŭmsan in Is. Namhaedo, GN, 13, VI, 1977).
3. *Lipaster (Morphocarabus) monilis consitus* (Muhlhouse, France, 20, IV, 1976)..



Plate XXXIII.

Endophalli of carabids (6).

1. *Lipaster (Morphocarabus) hummeli tristiculus* (Khingan, Manchuria, 20, VII, 1933).
2. *Lipaster (Leptinocarabus) wulffiusi wulffiusi* (Mt. Kwanmobong, HB, 28, VII, 1934).
3. *Lipaster (Leptinocarabus) wulffiusi opacipennis* (Mt. Sölkasan, GW, 12, VIII, 1969).
4. *Lipaster (Leptinocarabus) wulffiusi alpinus* subsp. nov. (Mt. T'aebaeksan, GW, 27, VI, 1976).



2mm

Plate XXXIV.

Endophalli of carabids (7).

1. *Leptocarabus* (s. str.) *procerulus procerulus* (Senjyogahara, Nikko, Tochigi Pref., Honshu, Japan, 5, XI, 1969).
2. *Leptocarabus* (*Aulonocarabus*) *kurilensis sugai* (Mt. Rebundake, Is. Rebunto, Hokkaido, Japan, 2, VIII, 1968).
3. *Leptocarabus* (*Aulonocarabus*) *kwanmobongensis* sp. nov. (Mt. Kwanmobong, HB, ?, VII, 1934).
4. *Leptocarabus* (*Weolseocarabus*) *koreanus weolseoe* subgen. et subsp. nov. (Mt. Sölaksan, GW, 13, VIII, 1969).
5. *Leptocarabus* (*Pentacarabus*) *harmandi okutamaensis* (Mt. Mitsutogeyama, Yamanashi Pref., Honshu, Japan, 2, VI, 1971).

Praeputial pads of *Leptocarabus* (*Weolseocarabus*) *koreanus*.

6. *Leptocarabus* (*Weolseocarabus*) *koreanus weolseoe* subgen. et subsp. nov. (Mt. Sölaksan, GW, 13, VIII, 1969).
7. *Leptocarabus* (*Weolseocarabus*) *koreanus koreanus* subgen. nov. (Mt. P'algongsan, GB, 3, IX, 1982).
8. *Leptocarabus* (*Weolseocarabus*) *koreanus koreanus* subgen. nov. (Mt. Kayasan, GN, 12, IX, 1982).
9. *Leptocarabus* (*Weolseocarabus*) *koreanus koreanus* subgen. nov. (Mt. Kŭmjŏngsan, GN, 21, IX, 1982).
10. *Leptocarabus* (*Weolseocarabus*) *koreanus koreanus* subgen. nov. (Is. Kōjedo, GN, 15, VI, 1977).
11. *Leptocarabus* (*Weolseocarabus*) *koreanus minor* subgen. et subsp. nov. (Mt. Sobaeksan, GB, 23, VII, 1977).

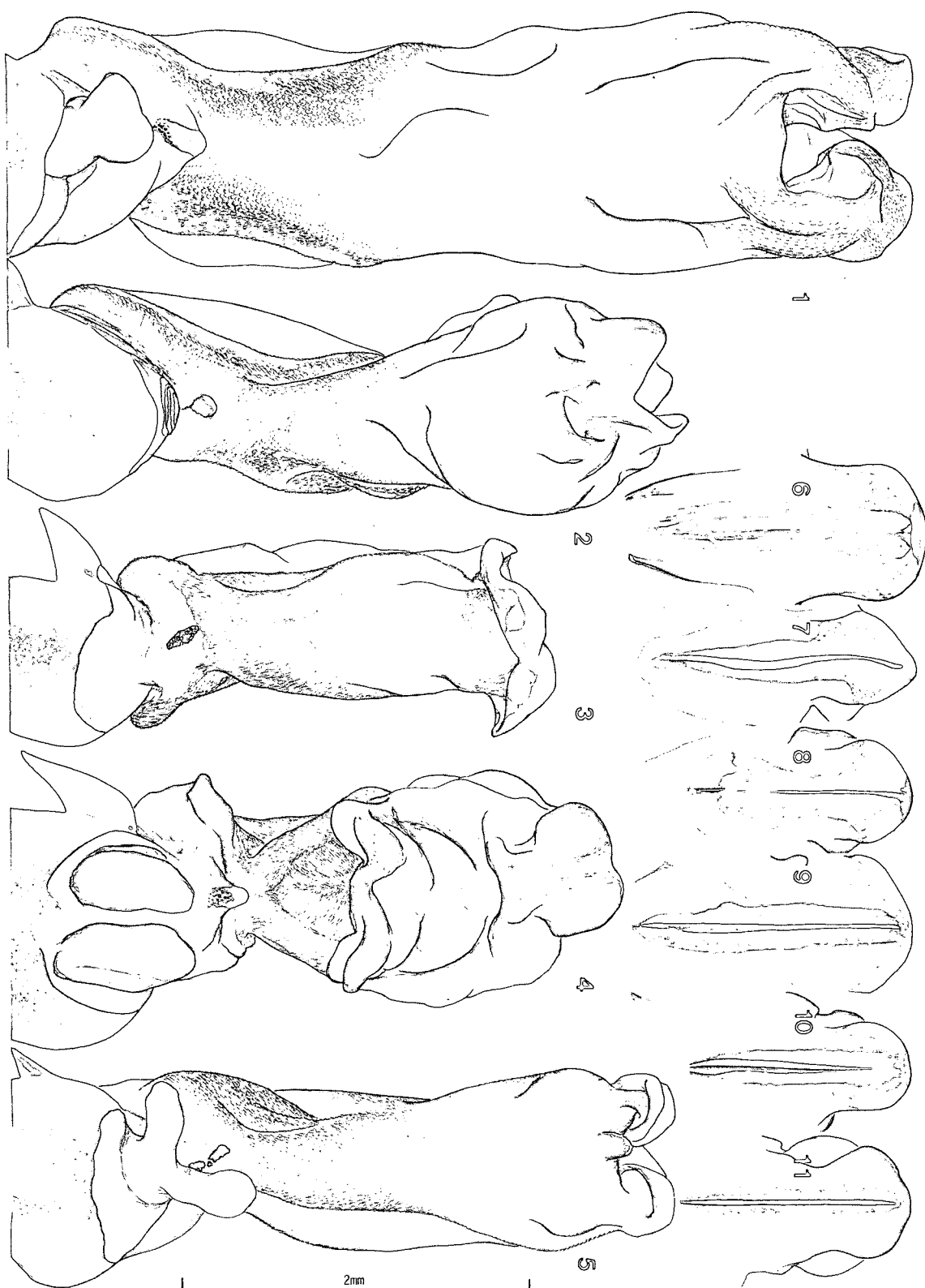


Plate XXXV.

Endophalli of carabids (8).

1. *Leptocarabus (Adelocarabus) semiopacus* (Mt. Sōlaksan, GW, 12, VIII, 1969).
2. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Sōlaksan, GW, 30, VII, 1982).
3. *Leptocarabus (Adelocarabus) arboreus arboreus* (Aizankei, Mt. Daisetsuzan, Hokkaido, Japan, 12-15, VII, 1970).
4. *Leptocarabus (Astenocarabus) opaculus kurosawai* (Aizankei, Mt. Daisetsuzan, Hokkaido, Japan, 12-15, VII, 1970).

Praeputial pads of *Adelocarabus*.

5. *Leptocarabus (Adelocarabus) semiopacus* (Mt. Sobaeksan, GB, 23, VII, 1977).
6. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Sōlaksan, GW, 30, VII, 1982).

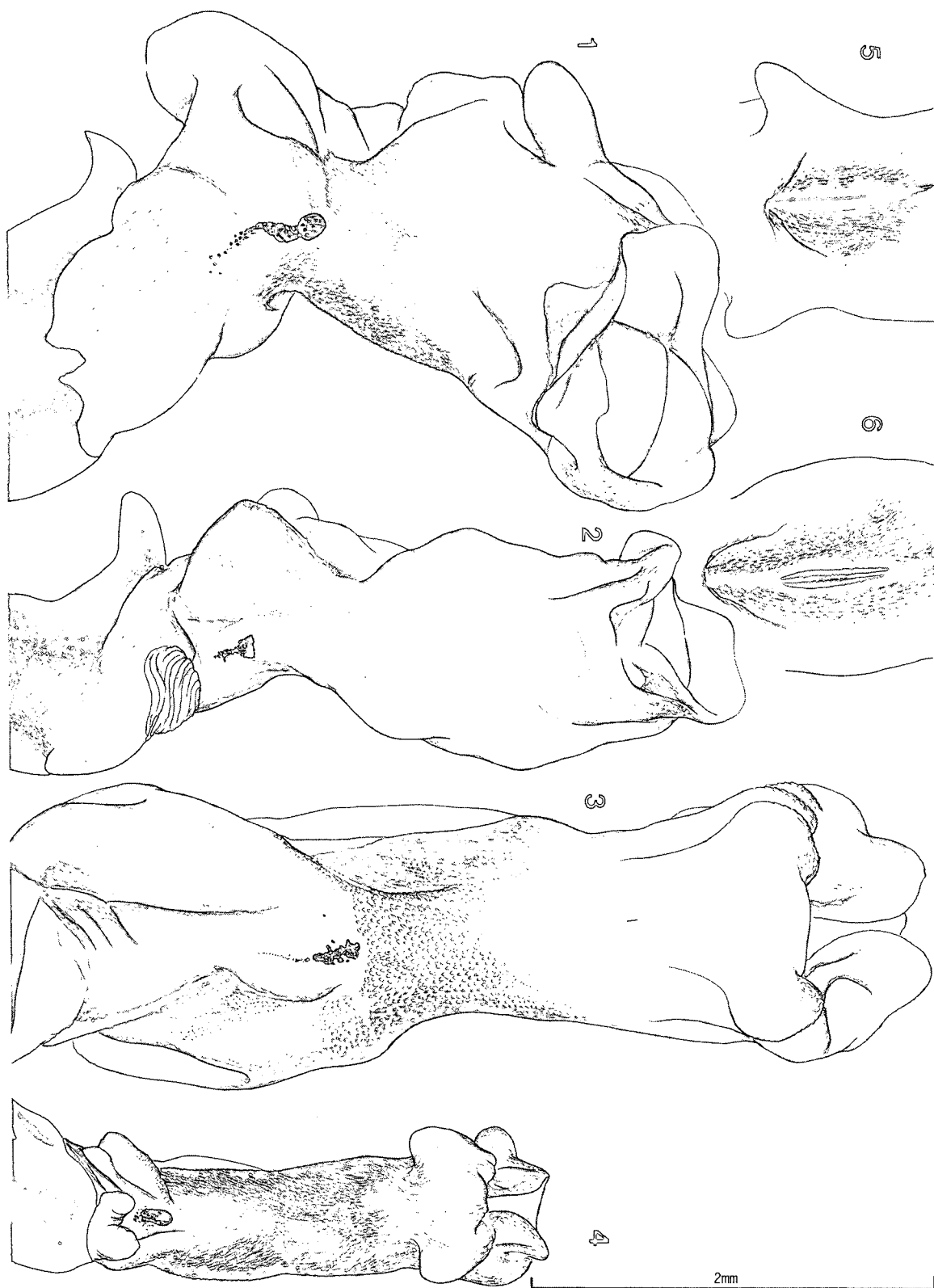


Plate XXXVI.

Endophalli of carabids (9).

1. *Hemicarabus* (s. str.) *tuberculosis* (Mt. Samnipsan, HB, ?, VI, 1930).
2. *Hemicarabus* (s. str.) *tuberculosis* (Mt. Hallasan, JJ, 18, VII, 1978).
3. *Hemicarabus* (s. str.) *macleayi coreensis* (Unsurŷong, HN, 28, VII, 1936).
4. *Hemicarabus* (*Homoeocarabus*) *maeander quelpartensis* subsp. nov. (Mt. Hallasan, JJ, 20, VI, 1968).
5. *Scambocarabus kruberi hallasanensis* subsp. nov. (Mt. Hallasan, JJ, 8, VI, 1982).
- 5-1. ditto, praeputial pad.
6. *Cathaicus brandti* (Shienhien, China, 15, VI, 1936).

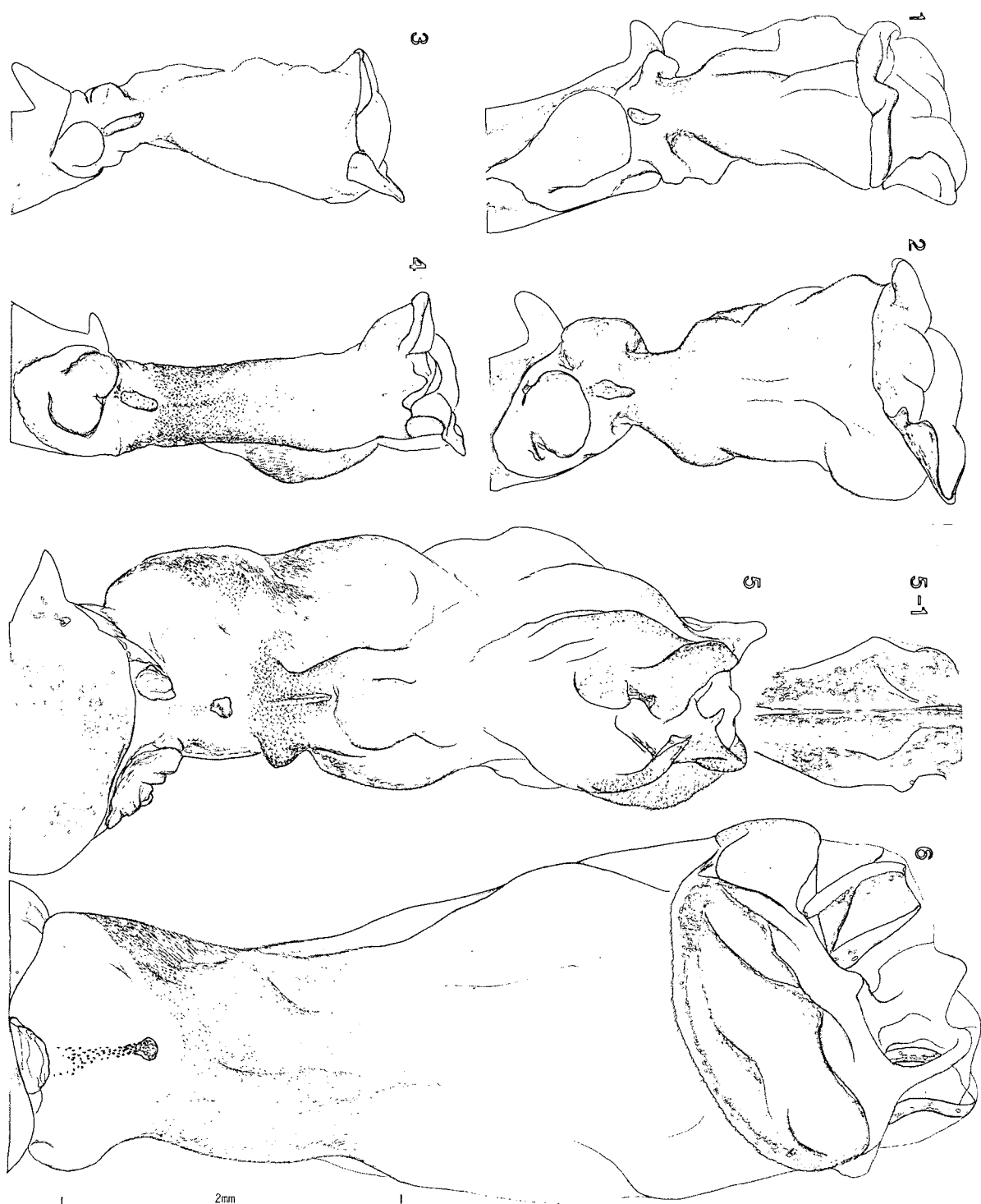


Plate XXXVII.

Endophalli of carabids (10).

1. *Tomocarabus fraterculus affinis* subsp. nov. (Mt. Sölaksan, GW, 29, VII, 1971).
2. *Megodontus* (s. str.) *purpurascens crenatocostatus* (Bruxelle, Belgium, ?, VI, 1975).
3. *Megodontus* (s. str.) *violaceus candisatus* (Bayrischer Wald, Buchenau, Germany, 14, IX, 1975).
4. *Megodontus* (*Ainocarabus*) *kolbei kolbei* (Mt. Apoidake, Hidaka, Hokkaido, Japan, 26, VIII, 1971).
5. *Procrustes coriaceus* (Munnes Tadder Wald, bei Kissingen, Unterfranken, Germany, 10, IX, 1976).

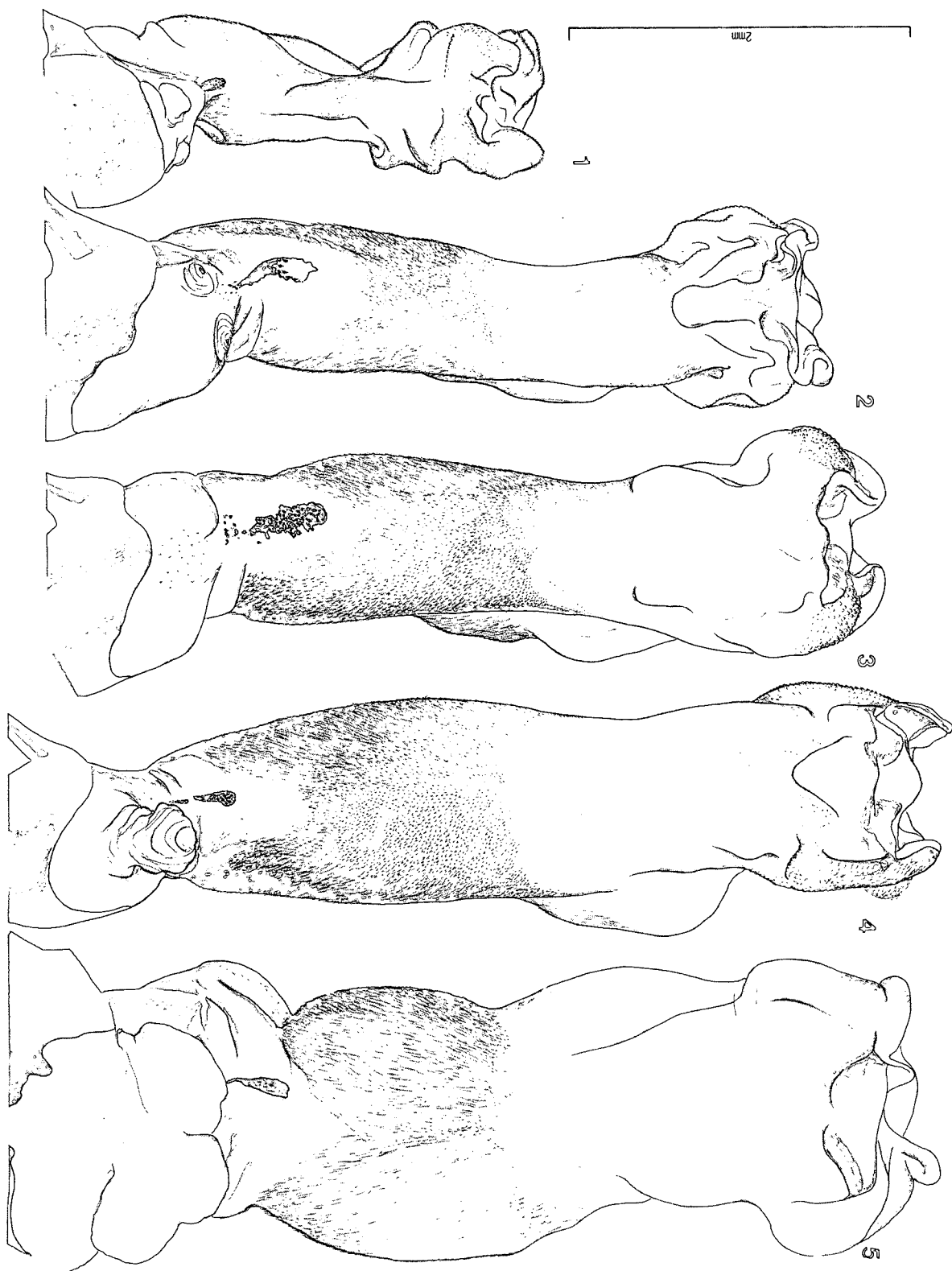
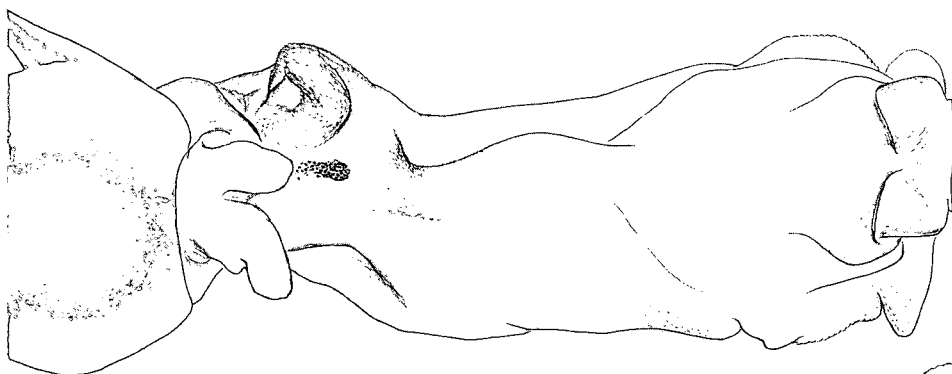


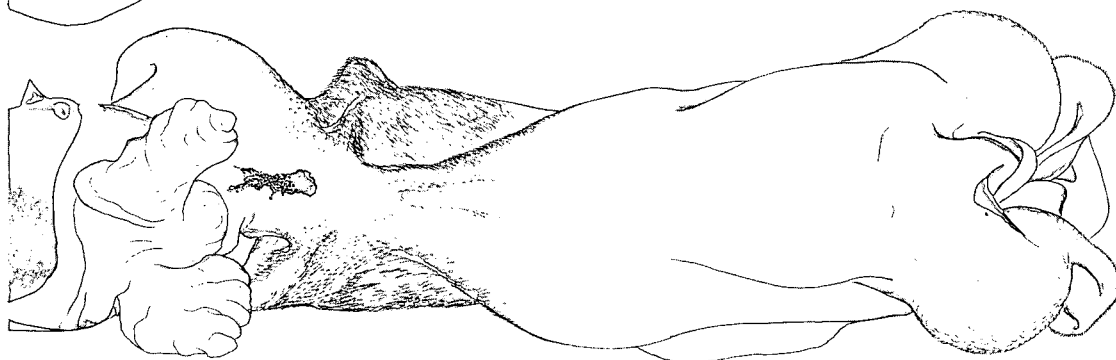
Plate XXXVIII.

Endophalli of carabids (11).

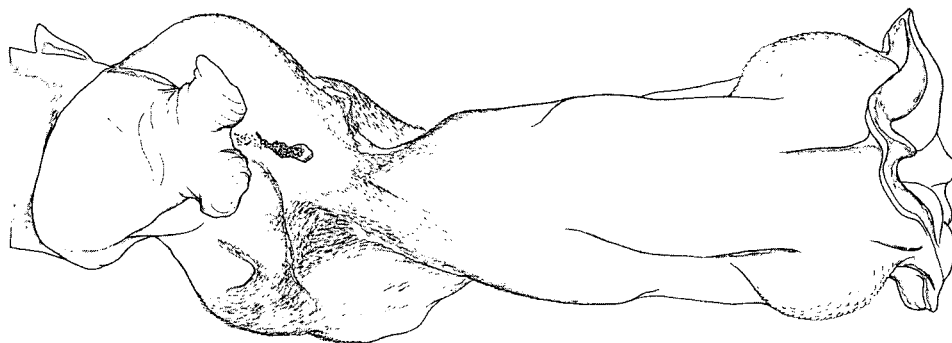
1. *Autocarabus auratus lotharingus* (Montpellier, France, 30, III, 1975).
2. *Damaster (Koreacoptolabrus) constricticollis constricticollis* subgen. nov. (Mt. Odaesan, GW, 9, VIII, 1976).
3. *Damaster (Koreacoptolabrus) mirabilissimus* subgen. nov. (Mt. T'aebaeksan, GW, 27, VI, 1976).
4. *Damaster (Acoptolabrus) gehini gehini* (Jyozankei, Sapporo, Hokkaido, Japan, 24, VI, 1979).



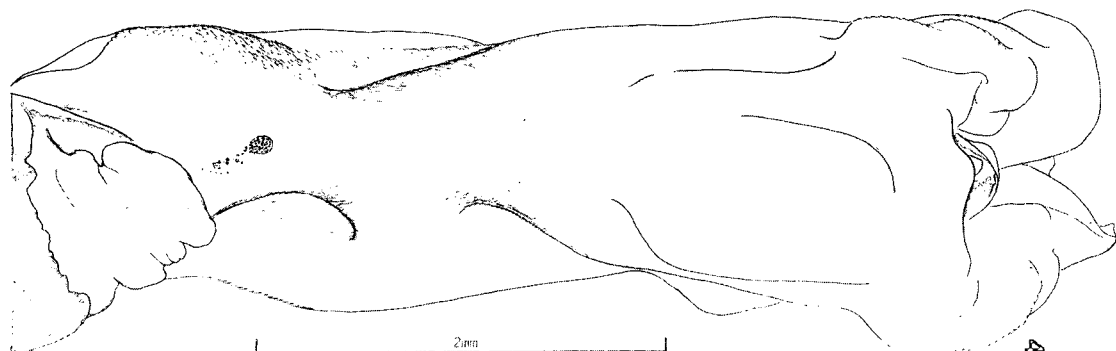
1



2



3



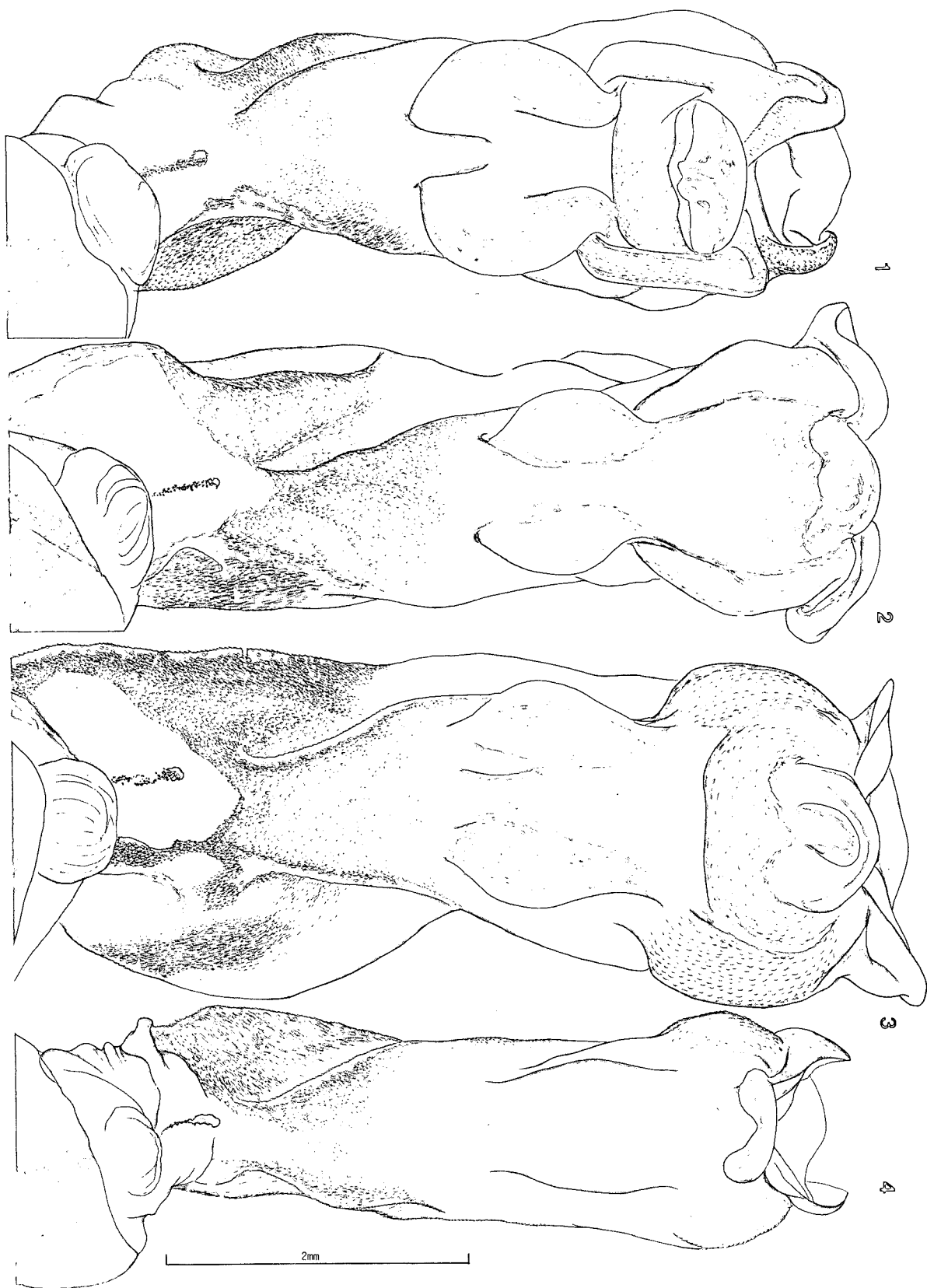
4

2 cm

Plate XXXIX.

Endophalli of carabids (12).

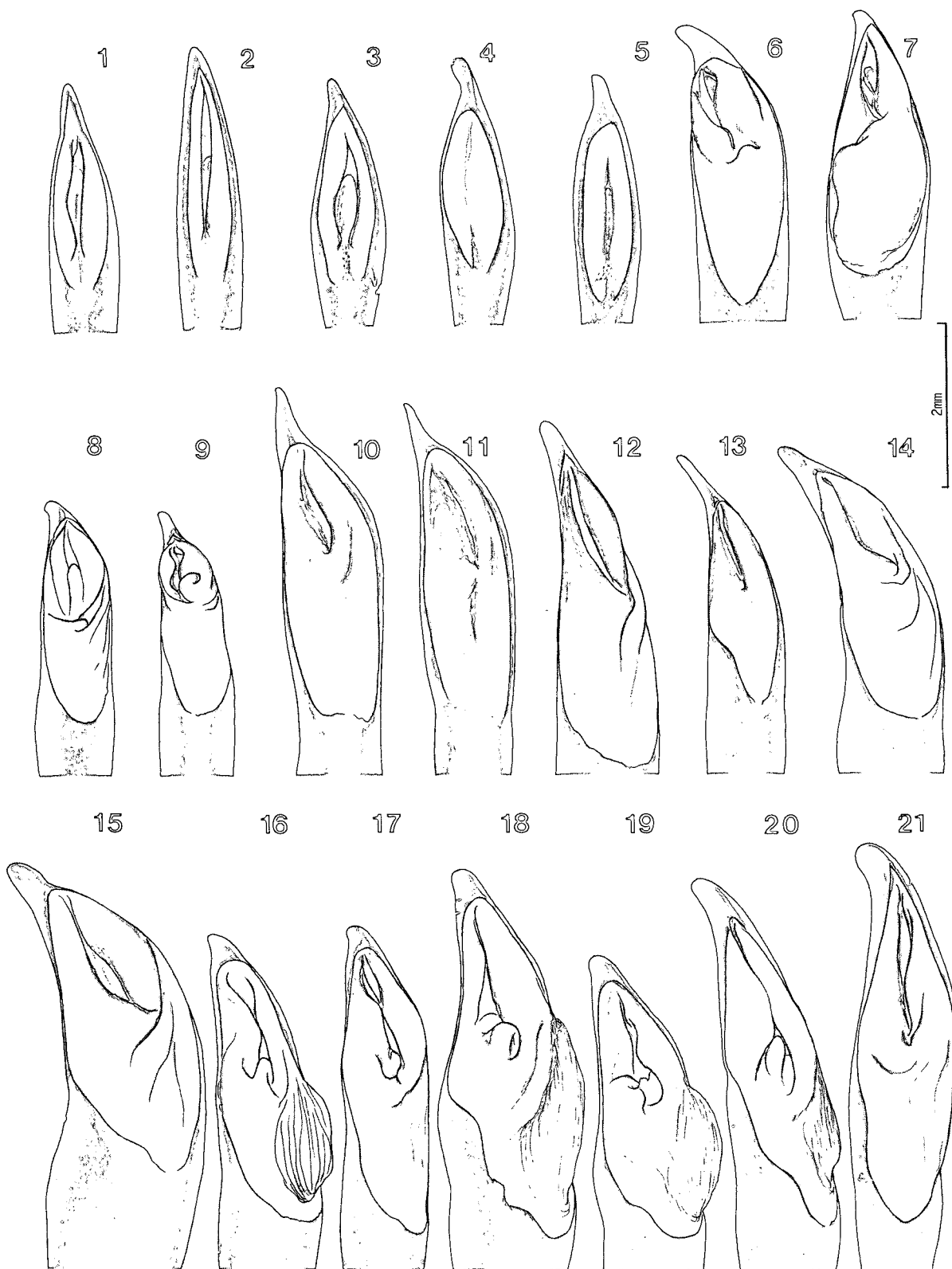
1. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Sōlaksan, GW, 21, VIII, 1969).
2. *Damaster (Coptolabrus) fruhstorferi* (Mt. Mitake, Is. Tsushima, Nagasaki Pref., Japan, 27, IV, 1972).
3. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Sōlaksan, GW, 12, VIII, 1969).
4. *Damaster* (s. str.) *blaptoides rugipennis* (Asahigawa, Hokkaido, Japan, 8, VII, 1977).



## Plate XL.

### Aedeagal ostia of carabids (1).

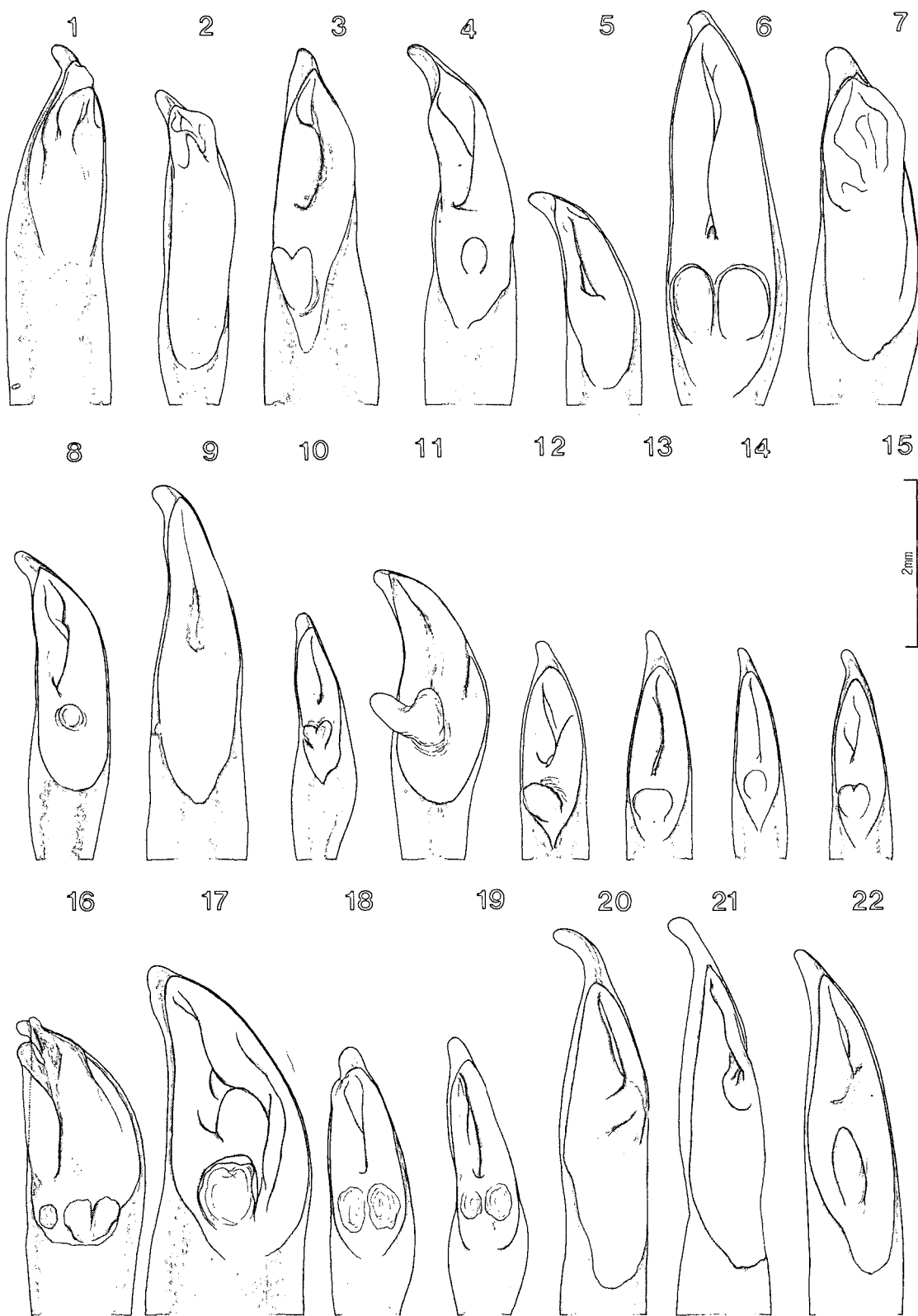
1. *Calosoma maximowiczii* (Mt. Ch'ŏnmasan, GG, 28, V, 1972).
2. *Calosoma maximowiczii* (Mt. Hallasan, JJ, 30, VII, 1972).
3. *Calosoma inquisitor cyanescens* (Nanam, HB, 10, VI, 1929).
4. *Charmosta lugens* (Ch'ŏngjin, HB, ?, VIII, 1929).
5. *Campalita chinense* (Seoul, GG, 14, VIII, 1971).
6. *Apotomopterus (Limnocarabus) clathratus aquatilis* comb. nov. (Chikauchi, Miyako City, Honshu, Japan, 30, VII, 1973).
7. *Apotomopterus (Euleptocarabus) porrecticollis porrecticollis* (Mt. Sotoyama, Nikko, Tochigi Pref., Honshu, Japan, 3, XI, 1969).
8. *Carabus* (s. str.) *granulatus ussuriensis* (Mt. Kwanmobong, HB, 18, VII, 1932).
9. *Carabus (Eutelocarabus) conciliator faldermanni* (Seoul, GG, ?, VII, 1961).
10. *Carabus (Isiocarabus) fiduciarius kirinicus* (Mt. Un'gilsan, GG, 22, V, 1983).
11. *Carabus (Isiocarabus) fiduciarius saishutoicus* (Mt. Hallasan, JJ, 28, VII, 1978).
12. *Carabus (Ohomopterus) dehaanii dehaanii* (Mt. Hieizan, Kyoto Pref., Honshu, Japan, 15, I, 1967).
13. *Carabus (Ohomopterus) albrechti freyi* (Ogi, Is. Sadogashima, Honshu, Japan, 21, XI, 1971).
14. *Carabus (Ohomopterus) esakii* (Izu Peninsula, Shizuoka Pref., Honshu, Japan, 20, XII, 1973).
15. *Carabus (Ohomopterus) insulicola insulicola* (Kizoro, Saitama Pref., Honshu, Japan, ?, II, 1968).
16. *Carabus (Parhomopterus) sternbergi cartereti* (Mt. Sŏlaksan, GW, 27, VII, 1982).
17. *Carabus (Parhomopterus) sternbergi chirisanensis* subsp. nov. (Mt. Chirisan, GN, 13, VII, 1981).
18. *Carabus (Parhomopterus) sternbergi honamensis* subsp. nov. (Mt. Chogyesan, JN, 10, VIII, 1976).
19. *Carabus (Parhomopterus) sternbergi touzalini* (Mt. Hallasan, JJ, 22, V 1968).
20. *Carabus (Parhomopterus) sternbergi kojedoensis* subsp. nov. (Is. Kŏjedo, GN, 19, VI, 1970).
21. *Carabus (Parhomopterus) namhaedoensis* sp. nov. (Mt. Kŭmsan in Is. Namhaedo, GN, 13, VI, 1977).



## PLate XLI.

### Aedeagal ostia of carabids (2).

1. *Lipaster (Morphocarabus) hummeli tristiculus* (Khingan, Manchuria, 20, VII, 1933).
2. *Lipaster (Leptinocarabus) wulffiusi opacipennis* (Mt. Sölaksan, GW, 12, VIII, 1969).
3. *Leptocarabus* (s. str.) *procerulus procerulus* (Senjyogahara, Nikko, Tochigi Pref., Honshu, Japan, 5, XI, 1969).
4. *Leptocarabus (Aulonocarabus) kurilensis sugai* (Mt. Rebundake, Is. Rebunto, Hokkaido, Japan, 2, VIII, 1968).
5. *Leptocarabus (Aulonocarabus) kwanmobongensis* sp. nov. (Mt. Kwanmobong, HB, ?, VII, 1934).
6. *Leptocarabus (Weolseocarabus) koreanus weolseoe* subgen. et subsp. nov. (Mt. Sölaksan, GW, 13, VIII, 1969).
7. *Leptocarabus (Adelocarabus) semiopacus* (Mt. Sölaksan, GW, 12, VIII, 1969).
8. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Sölaksan, GW, 30, VII, 1982).
9. *Leptocarabus (Adelocarabus) arboreus arboreus* (Aizankei, Mt. Daisetsuzan, Hokkaido, Japan, 12-15, VII, 1970).
10. *Leptocarabus (Astenocarabus) opaculus kurosawai* (Aizankei, Mt. Daisetsuzan, Hokkaido, Japan, 12-15, VII, 1970).
11. *Leptocarabus (Pentacarabus) harmandi okutamaensis* (Mt. Mitsutogeyama, Yamanashi Pref., Honshu, Japan, 2, VI, 1971).
12. *Hemicarabus* (s. str.) *tuberculosis* (Mt. Samnipsan, HB, ?, VI, 1930).
13. *Hemicarabus* (s. str.) *tuberculosis* (Mt. Hallasan, JJ, 18, VII, 1978).
14. *Hemicarabus* (s. str.) *macleayi coreensis* (Unsurýöng, HN, 28, VII, 1936).
15. *Hemicarabus (Homoeocarabus) maeander quelpartensis* subsp. nov. (Mt. Hallasan, JJ, 20, VI, 1968).
16. *Scambocarabus kruberi hallasanensis* subsp. nov. (Mt. Hallasan, JJ, 8, VI, 1972).
17. *Cathaicus brandti* (Shienhien, China, 15, VI, 1936).
18. *Tomocarabus fraterculus fraterculus* (Unsurýöng, HN, 16, VII, 1935).
19. *Tomocarabus fraterculus affinis* subsp. nov. (Mt. Sölaksan, GW, 29, VII, 1971).
20. *Megodontus* (s. str.) *purpurascens crenatocostatus* (Bruxelle, Belgium, ?, VI, 1975).
21. *Megodontus* (s. str.) *violaceus candisatus* (Bayriseher Wald, Buchenau, Germany, 14, IX, 1975).
22. *Megodontus (Ainocarabus) kolbei kolbei* (Mt. Apoidake, Hidaka, Hokkaido, Japan, 26, VIII, 1971).



## Plate XLII.

### Aedeagal ostia of carabids (3).

1. *Procrustes coriaceus* (Munnes Tadder Wald, bei Kissingen, Unterfranken, Germany, 10, IX, 1976).
2. *Autocarabus auratus lotharingus* (Montpellier, France, 30, III, 1975).
3. *Damaster (Koreacoptolabrus) constricticollis constricticollis* subgen. nov. (Mt. Odaesan, GW, 9, VIII, 1976).
4. *Damaster (Koreacoptolabrus) mirabilissimus* subgen. nov. (Mt. Taebaeksan, GW, 27, VI, 1976).
5. *Damaster (Acoptolabrus) gehini gehini* (Jyozankei, Sapporo, Hokkaido, Japan, 24, VI, 1979).
6. *Damaster (Acoptolabrus) gehini munakatai* (Mt. Daisengendake, Hokkaido, Japan, 19-23, VIII, 1973).
7. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Sōlaksan, GW, 5, VIII, 1969).
8. *Damaster (Coptolabrus) fruhstorferi* (Mt. Mitake, Is. Tsushima, Nagasaki Pref., Japan, 27, IV, 1972).
9. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Sōlaksan, GW, 12, VIII, 1969).
10. *Damaster* (s. str.) *blaptoides rugipennis* (Asahigawa, Hokkaido, Japan, 8, VII, 1977).
11. *Cychrus morawitzi* (Mt. Apoidake, Hidaka, Hokkaido, Japan, 26, VIII, 1971).

### Apical parts of aedeagi of carabids in lateral view (1).

12. *Calosoma maximowiczi* (Mt. Ch'ōnmasan, GG, 28, V, 1972).
13. *Calosoma maximowiczi* (Mt. Hallasan, JJ, 30, VII, 1972).
14. *Calosoma inquisitor cyanescens* (Nanam, HB, 10, VI, 1929).
15. *Calosoma inquisitor cyanescens* (Mt. Myōngjisan, GG, 27, V, 1978).
16. *Calosoma inquisitor cyanescens* (Is. Ullūngdo, GB, 8, VI, 1963).
17. *Charmosta lugens* (Ch'ōngjin, HB, ?, VIII, 1929).

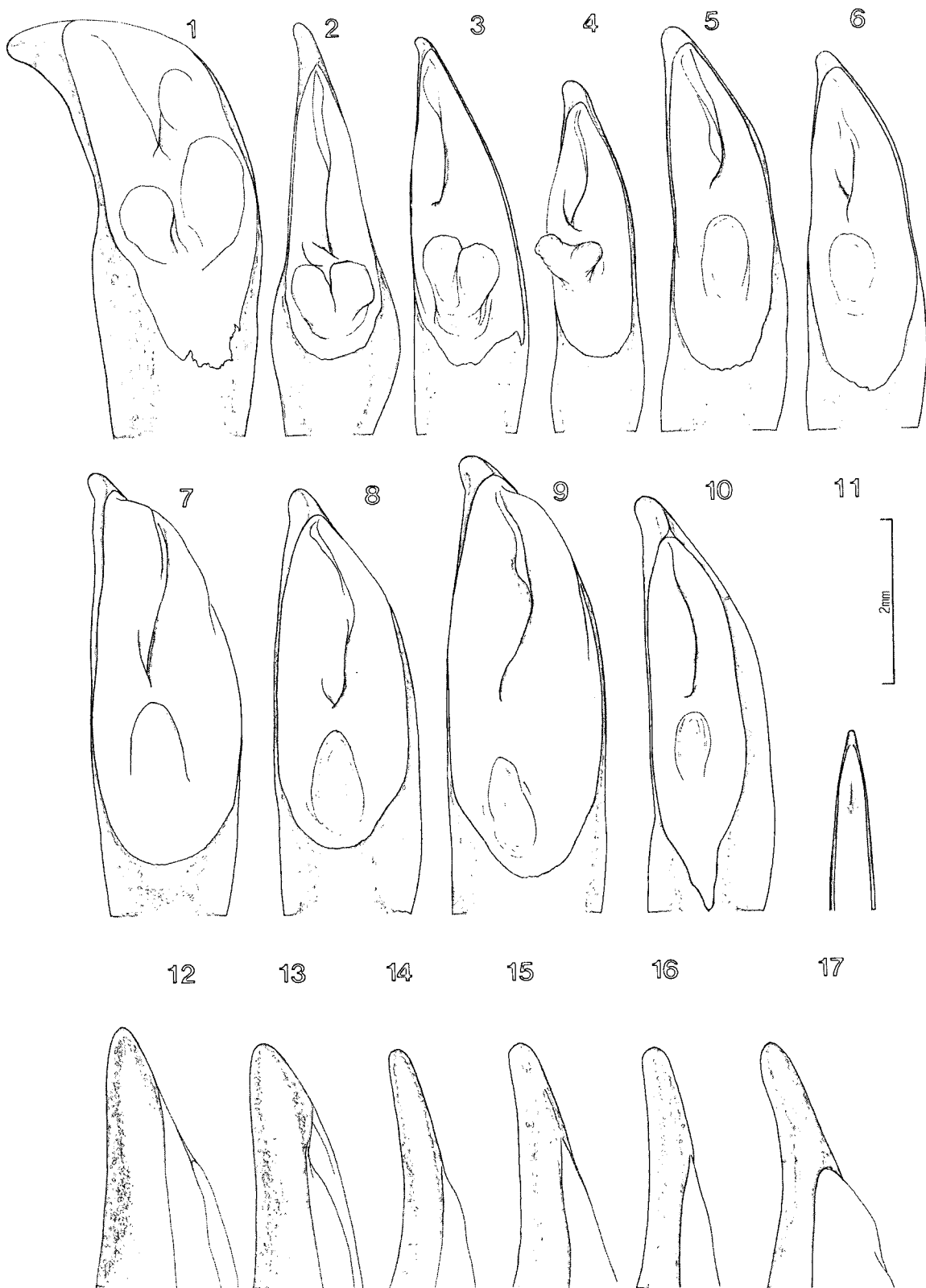


Plate XLIII.

Apical parts of aedeagi of carabids in lateral view (2).

1. *Campalita chinense* (Seoul, GG, 14, VIII, 1971).
2. *Campalita chinense* (Kamishihoro, Tokachi, Hokkaido, Japan, 23, VII, 1970).
3. *Campalita chinense* (Ippongi, Saitama Pref., Honshu, Japan, ?, VII, 1968).
4. *Apotomopterus* (*Limnocarabus*) *clathratus aquatilis* comb. nov. (Chikauchi, Miyaco City, Honshu, Japan, 30, VII, 1973).
5. *Apotomopterus* (*Euleptocarabus*) *porrecticollis porrecticollis* (Mt. Sotoyama, Nikko, Tochigi Pref., Honshu, Japan, 3, XI, 1969).
6. *Apotomopterus* (*Euleptocarabus*) *porrecticollis kansaiensis* (Kameoka City, Kyoto Pref., Honshu, Japan, 15, I, 1966).
7. *Apotomopterus* (s. str.) *sauteri* (Tengchih, Kaoshunsien, Taiwan, ?, VIII, 1975).
8. *Carabus* (s. str.) *granulatus granulatus* (Kissingen, Unterfranken, Germany, 1, III, 1976).
9. *Carabus* (s. str.) *granulatus granulatus* (Kissingen, Unterfranken, Germany, 19, XI, 1975).
10. *Carabus* (s. str.) *granulatus granulatus* (Bohemia, Pisek, Czechoslovakia, ?, VI, 1965).
11. *Carabus* (s. str.) *granulatus ussuriensis* (Mt. Kwanmobong, HB, 18, VII, 1932).
12. *Carabus* (s. str.) *granulatus telluris* (Fukushimagata, Tsukioka Pref., Honshu, Japan, 31, III, 1969).
13. *Carabus* (s. str.) *granulatus yezoensis* (Kawayu, Kushiro, Hokkaido, Japan, 10, VII, 1969).
14. *Carabus* (*Eutelocarabus*) *arvensis germaniae* (Hoffenheim, Gr. Wald, Germany, ?, VI, 1974).
15. *Carabus* (*Eutelocarabus*) *conciliator faldermanni* (Seoul, GG, ?, VII, 1961).
16. *Carabus* (*Eutelocarabus*) *conciliator hokkaidensis* (Mt. Apoidake, Hidaka, Hokkaido, Japan, 5-9, VIII, 1970).
17. *Carabus* (*Eutelocarabus*) *conciliator hokkaidensis* (Aizankei, Mt. Daisetsuzan, Hokkaido, Japan, 12-15, VII, 1970).
18. *Carabus* (*Isiocarabus*) *fiduciaris kirinicus* (Mt. Un'gilsan, GG, 22, V, 1983).
- 19,20. *Carabus* (*Isiocarabus*) *fiduciaris saishutoicus* (Mt. Hallasan, JJ, 28, VII, 1978).
21. *Carabus* (*Ohomopterus*) *dehaanii dehaanii* (Mt. Hieizan, Kyoto Pref., Honshu, Japan, 15, I, 1967).

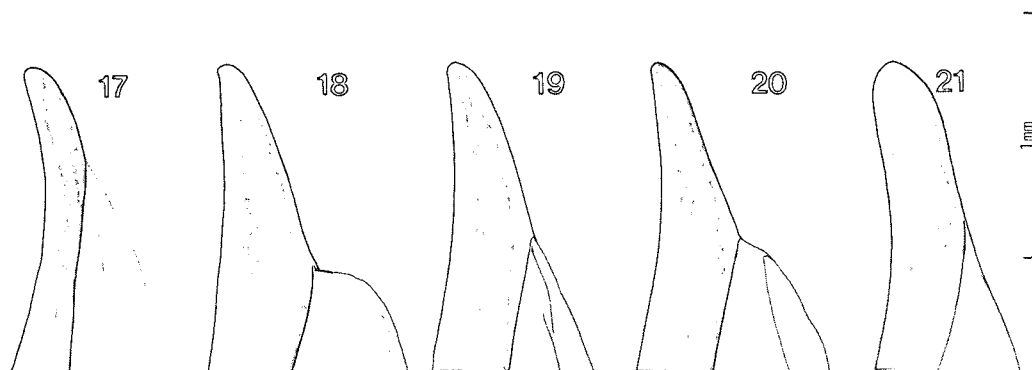
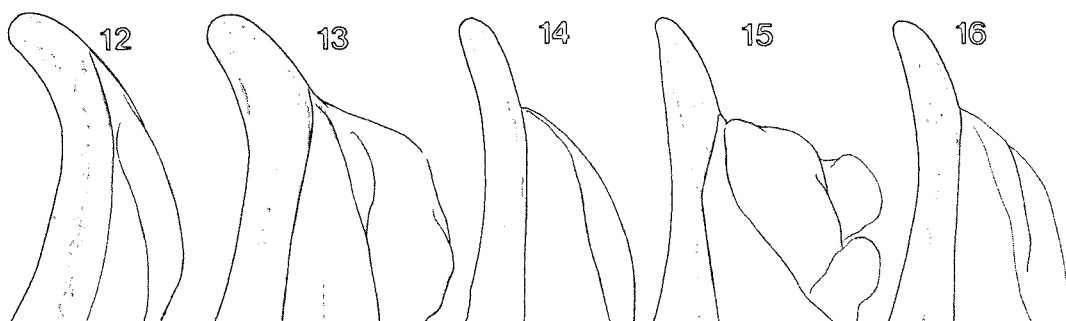
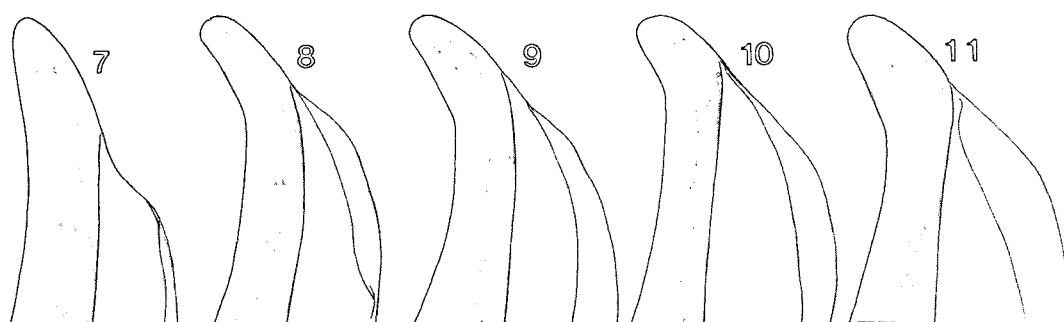


Plate XLIV.

Apical parts of aedeagi of carabids in lateral view (3).

1. *Carabus (Ohomopterus) dehaanii strenus* (Mt. Sobozan, Ohita Pref., Kyushu, Japan, 29, XII, 1969).
2. *Carabus (Ohomopterus) japonicus japonicus* (Mt. Sobozan, Ohita Pref., Kyushu, Japan, 29, XII, 1969).
3. *Carabus (Ohomopterus) japonicus tsushima* (Mt. Mitake, Is. Tsushima, Nagasaki Pref., Japan, 27, III, 1972).
4. *Carabus (Ohomopterus) lewisianus awakazusanus* (Mt. Tomisan, Chiba Pref., Honshu, Japan, 2, I, 1969).
5. *Carabus (Ohomopterus) albrechti freyi* (Ogi, Is. Sadogashima, Honshu, Japan, 21, XI, 1971).
6. *Carabus (Ohomopterus) yamato* (Mt. Katsuragisan, Nara Pref., Honshu, Japan, 30, V,-4, VI, 1975).
7. *Carabus (Ohomopterus) esakii* (Izu Peninsula, Shizuoka Pref., Honshu, Japan, 20, XII, 1973).
8. *Carabus (Ohomopterus) yaconinus yaconinus* (Mt. Hanataka, Shimane Pref., Honshu, Japan, 20, III, 1969).
9. *Carabus (Ohomopterus) yaconinus iwawakianus* (Mt. Iwawakisan, Osaka Pref., Honshu, Japan, 27-29, V, 1977).
10. *Carabus (Ohomopterus) insulicola insulicola* (Kizoro, Saitama Pref., Honshu, Japan, ?, II, 1968).
11. *Carabus (Ohomopterus) insulicola arrowianus* (Mt. Honguzan, Aichi Pref., Honshu, Japan, 17, VI, 1968).
12. *Carabus (Ohomopterus) insulicola nishigawai* (Kanamarubata, Bosohanto, Chiba Pref., Honshu, Japan, 1, I, 1969).
13. *Carabus (Ohomopterus) insulicola maiyasanus* (Yamanomachi, Kobe City, Honshu, Japan, 1, III, 1970).
14. *Carabus (Ohomopterus) uenoi* (Mt. Katsuragisan, Nara Pref., Honshu, Japan, 30, V,-4, VI, 1975).
15. *Carabus (Eucarabus) ullrichi ullrichi* (Slov., Lipt., Osada, Czechoslovakia, ?, VIII, 1968).
- 16,17. *Carabus (Parhomopterus) sternbergi cartereti* (Mt. Sölaksan, GW, 27, VII, 1982).
- 18,19,20. *Carabus (Parhomopterus) sternbergi cartereti* (Mt. Odaesan, GW, 18, IX, 1982).

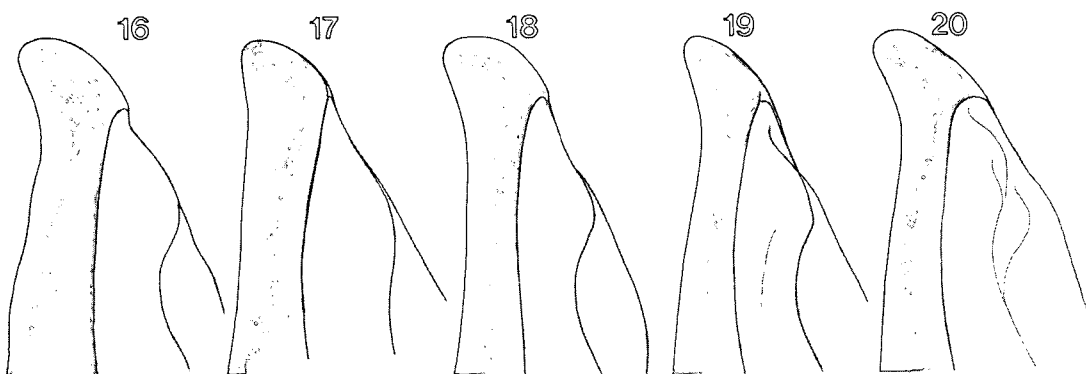
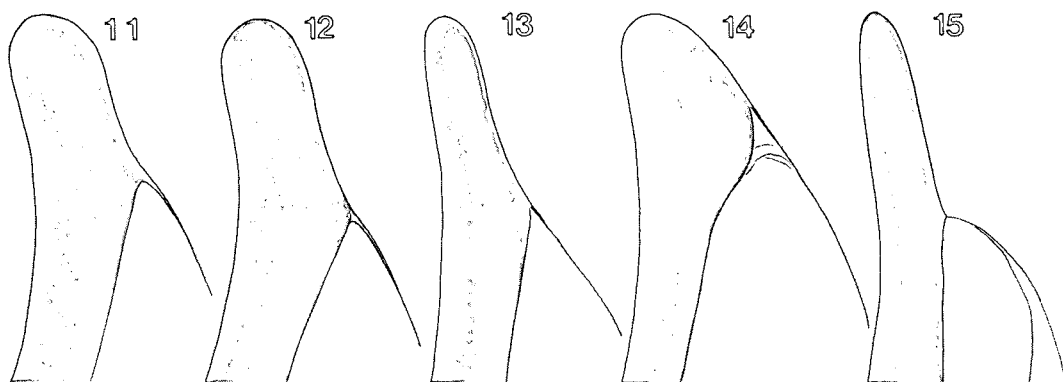
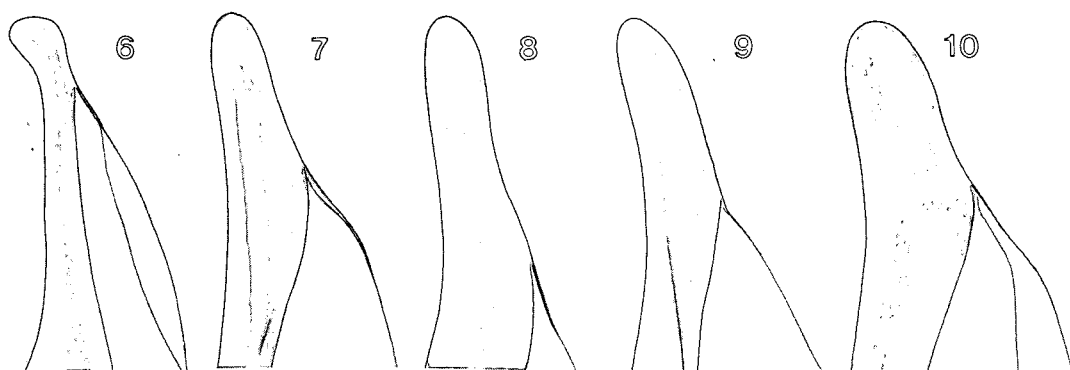
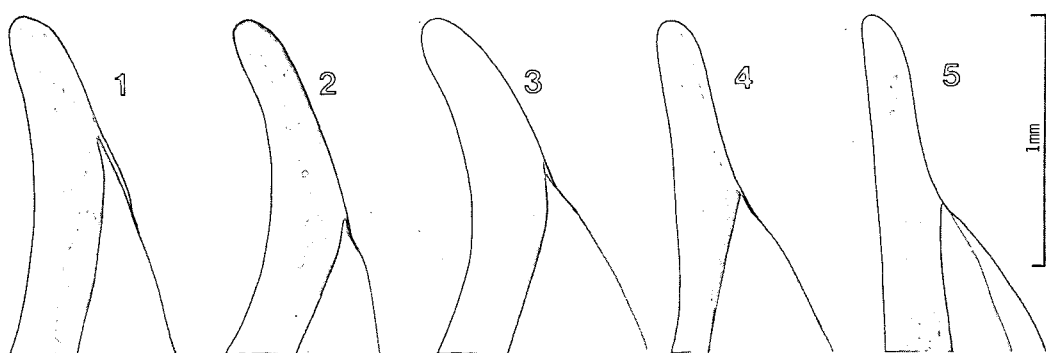
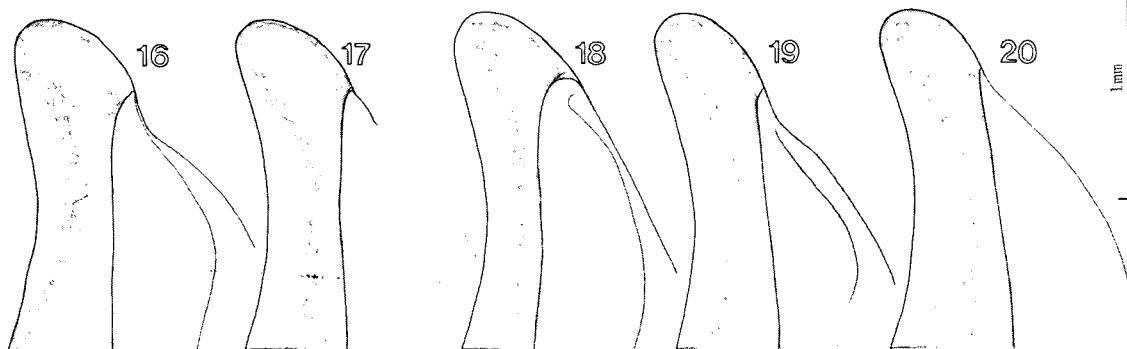
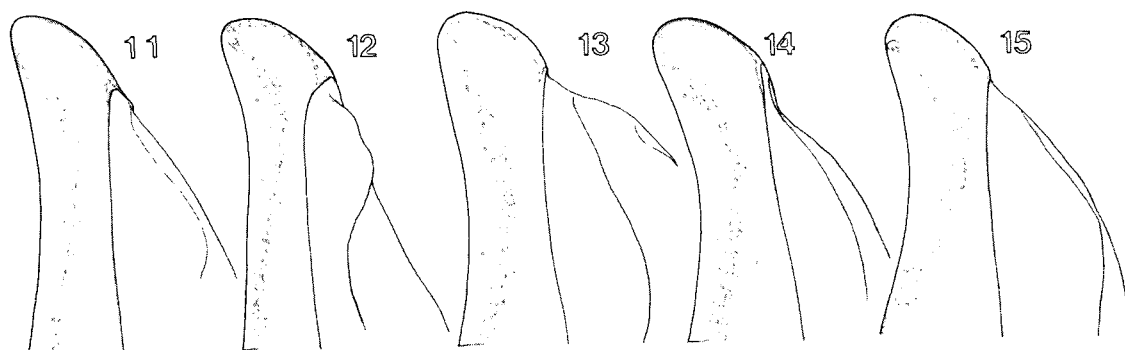
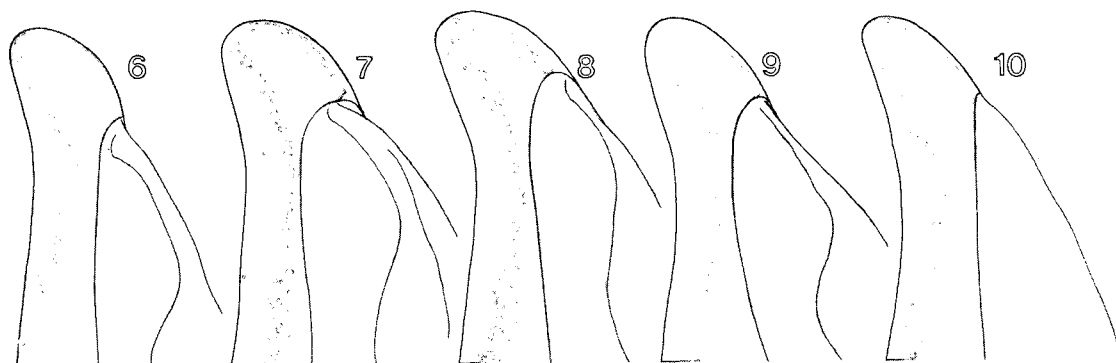
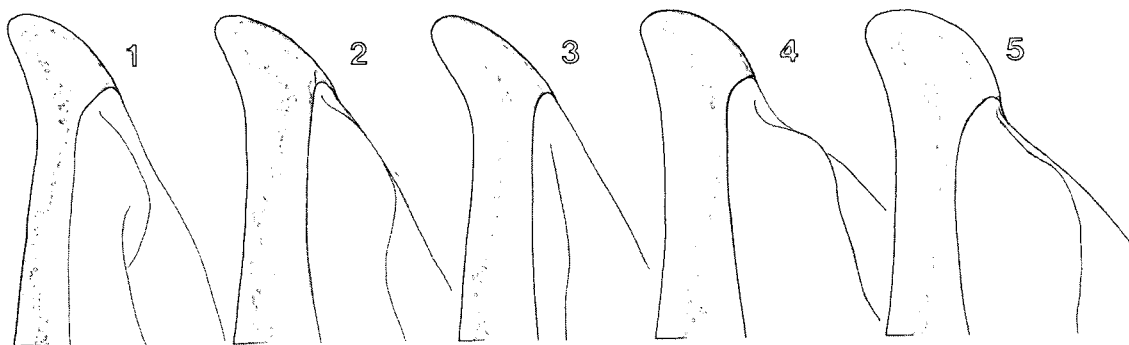


Plate XLV.

Apical parts of aedeagi of carabids in lateral view (4).

1. *Carabus (Parhomopterus) sternbergi cartereti* (Mt. Sogūmgang, GW, 7, IX, 1980).
- 2,3. *Carabus (Parhomopterus) sternbergi cartereti* (Mt. T'aebaeksan, GW, 27, VI, 1976).
- 4,5. *Carabus (Parhomopterus) sternbergi sobaeksanensis* subsp. nov. (Mt. Sobaeksan, GB, 24, VII, 1977).
6. *Carabus (Parhomopterus) sternbergi sobaeksanensis* subsp. nov. (Mt. Chuhūlsan, GB, 5, VI, 1983).
- 7,8. *Carabus (Parhomopterus) sternbergi palgongsanensis* subsp. nov. (Mt. P'algongsan, GB, 10, IX, 1982).
9. *Carabus (Parhomopterus) sternbergi tongdosanus* subsp. nov. (Mt. Sinbulsan, GN, 25, IX, 1982).
- 10,11. *Carabus (Parhomopterus) sternbergi chirisanensis* subsp. nov. (Mt. Chirisan, GN, 13, VII, 1981).
- 12,13. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Pangdaesan, GW, 27, VII, 1974).
14. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Myōngjisan, GG, 6, VI, 1976).
- 15,16. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Soyosan, GG, 5, VI, 1977).
17. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Aengmubong, GG, 26, VI, 1971).
18. *Carabus (Parhomopterus) sternbergi sternbergi* (Kwangnūng, GG, 15, VIII, 1971).
19. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Ch'ōnmasan, GG, 16, V, 1972).
20. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Tobongsan, GG, 19, VIII, 1976).



1mm

Plate XLVI.

Apical parts of aedeagi of carabids in lateral view (5).

1. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Pukhansan, GG, 11, VII, 1976).
2. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Tögam-san, GG, 6, IX, 1976).
3. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Yongmunsan, GG, 7, VI, 1977).
4. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Ch'iaksan, GW, 14, VI, 1976).
- 5,6. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Kwangdöksan, CN, 11, VII, 1982).
- 7,8. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Kyeryongsan, CN, 14, IX, 1975).
- 9,10. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Songnisan, CB, 10, VI, 1977).
11. *Carabus (Parhomopterus) sternbergi honamensis* subsp. nov. (Mt. Chogyesan, JN, 10, VIII, 1976).
12. *Carabus (Parhomopterus) sternbergi honamensis* subsp. nov. (Mt. Chogyesan, JN, 5, VI, 1983).
13. *Carabus (Parhomopterus) sternbergi honamensis* subsp. nov. (Is. Ch'ujado, JJ, 31, VII, 1972).
- 14,15. *Carabus (Parhomopterus) sternbergi touzalini* (Mt. Hallasan, JJ, 22, V, 1968).
- 16,17. *Carabus (Parhomopterus) sternbergi kojedoensis* subsp. nov. (Is. Kōjedo, GN, 19, VI, 1970).
18. *Carabus (Parhomopterus) namhaedoensis* sp. nov. (Mt. Kūmsan in Is. Namhaedo, GN, 13, VI, 1977).
19. *Lipaster (Morphocarabus) monilis consitus* (Muhlhouse, France, 20, IV, 1976).
20. *Lipaster (Morphocarabus) hummeli tristiculus* (Khingan, Manchuria, 20, VII, 1933).

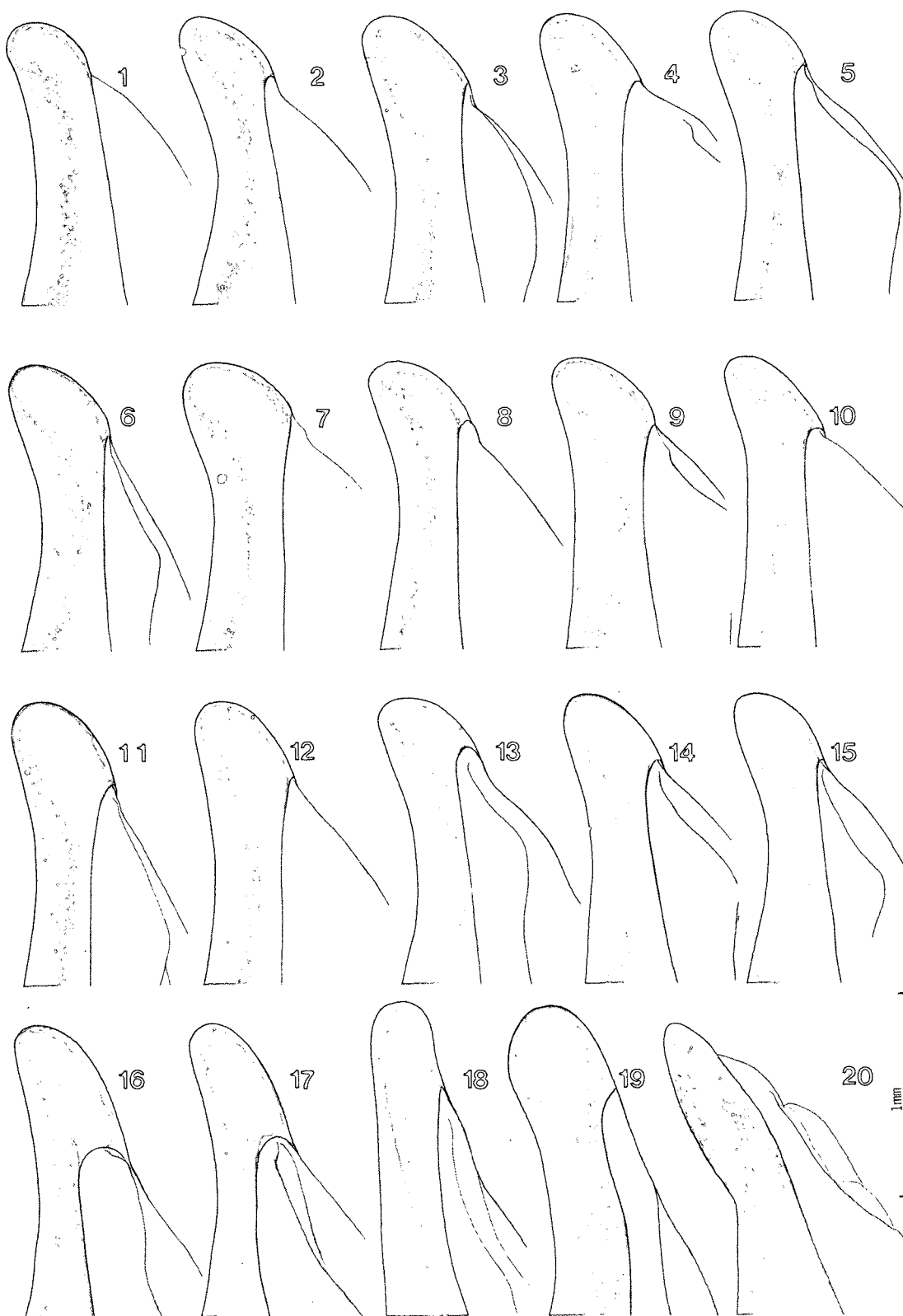


Plate XLVII.

Apical parts of aedeagi of carabids in lateral view (6).

1. *Lipaster (Leptinocarabus) wulffiussi wulffiussi* (Mt. Kwanmobong, HB, 28, VII, 1934).
- 2,3. *Lipaster (Leptinocarabus) wulffiussi opacipennis* (Mt. Sölaksan, GW, 12, VIII, 1969).
4. *Lipaster (Leptinocarabus) wulffiussi opacipennis* (Mt. Kach'ilbong, GW, 23, VII, 1981).
- 5,6. *Lipaster (Leptinocarabus) wulffiussi opacipennis* (Mt. Odaesan, GW, 7, VIII, 1971).
7. *Lipaster (Leptinocarabus) wulffiussi opacipennis* (Mt. Pangdaesan, GW, 26, VII, 1974).
- 8,9. *Lipaster (Leptinocarabus) wulffiussi opacipennis* (Mt. Myöngjisan, GG, 27, V, 1978).
- 10,11. *Lipaster (Leptinocarabus) wulffiussi opacipennis* (Mt. Tögamsan, GG, 6, IX, 1976).
12. *Lipaster (Leptinocarabus) wulffiussi alpinus* subsp. nov. (Mt. T'aebaeksan, GW, 27, VI, 1976).
13. *Leptocarabus* (s. str.) *procerulus procerulus* (Senjyogahara, Nikko, Tochigi Pref., Honshu, Japan, 5, XI, 1969).
14. *Leptocarabus (Aulonocarabus) kurilensis sugai* (Mt. Rebundake, Is. Rebunto, Hokkaido, Japan, 2, VIII, 1968).
15. *Leptocarabus (Aulonocarabus) kurilensis daisetsuzanus* (Mt. Daisetsuzan, Hokkaido, Japan, 2, VIII, 1968).
16. *Leptocarabus (Aulonocarabus) kwanmobongensis* sp. nov. (Mt. Kwanmobong, HB, ?, VII, 1934).
17. *Leptocarabus (Weolseocarabus) koreanus weolseoe* subgen. et subsp. nov. (Mt. Sölaksan, GW, 13, VIII, 1969).
18. *Leptocarabus (Weolseocarabus) koreanus weolseoe* subgen. et subsp. nov. (Mt. Sölaksan, GW, 14, VIII, 1969).
- 19,20. *Leptocarabus (Weolseocarabus) koreanus koreanus* subgen. nov. (Mt. Kach'ilbong, GW, 24, VII, 1981).

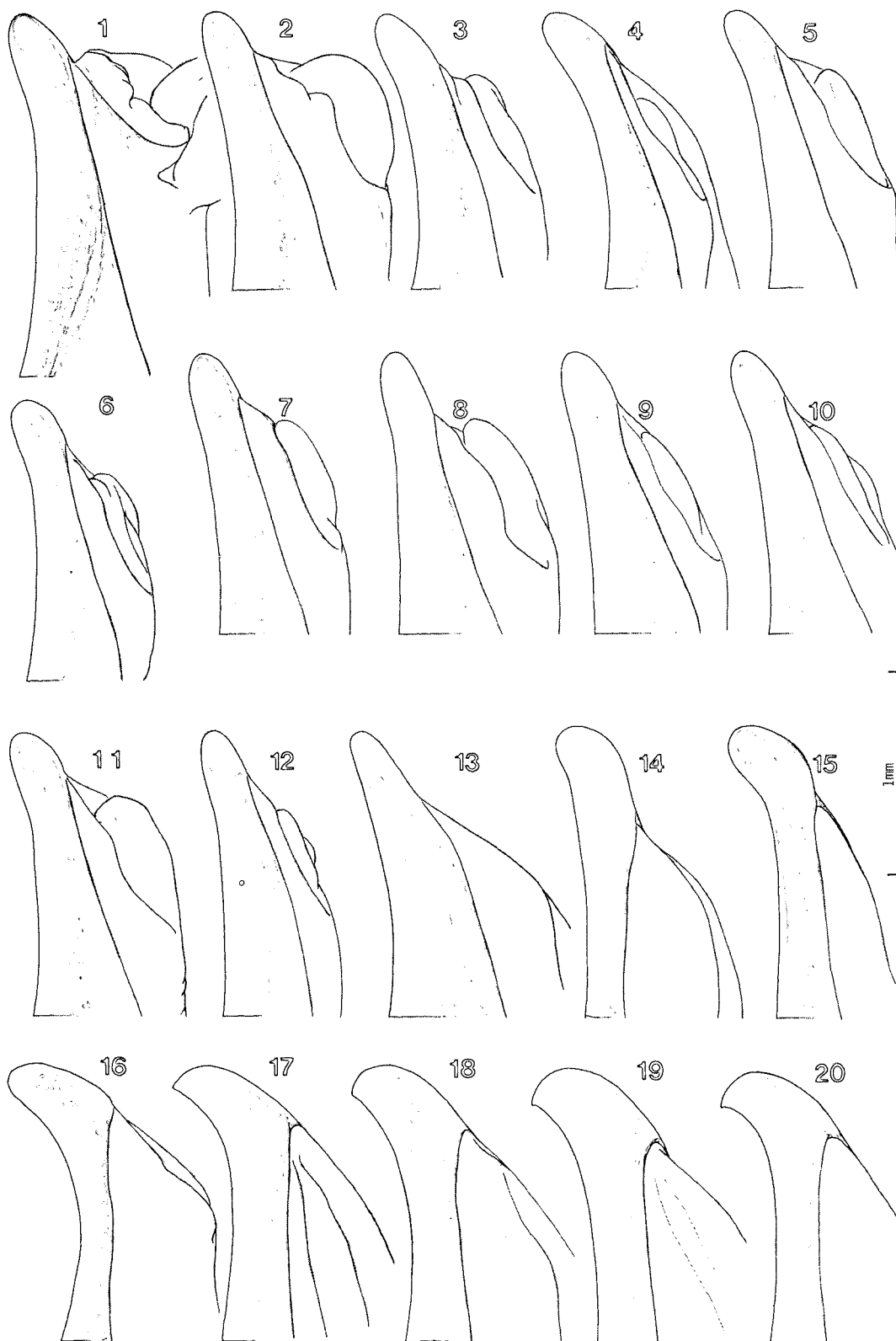


Plate XLVIII.

Apical parts of aedeagi of carabids in lateral view (7).

1. *Leptocarabus (Weolseocarabus) koreanus koreanus* subgen. nov. (Konjiam, GG, 6, IX, 1976).
2. *Leptocarabus (Weolseocarabus) koreanus koreanus* subgen. nov. (Konjiam, GG, 1, VIII, 1976).
3. *Leptocarabus (Weolseocarabus) koreanus koreanus* subgen. nov. (Mt. P'algongsan, GB, 3, IX, 1982).
- 4,5. *Leptocarabus (Weolseocarabus) koreanus koreanus* subgen. nov. (Mt. T'ohamsan, GB, 22, IX, 1982).
6. *Leptocarabus (Weolseocarabus) koreanus koreanus* subgen. nov. (Mt. Kayasan, GN, 12, IX, 1982).
7. *Leptocarabus (Weolseocarabus) koreanus koreanus* subgen. nov. (Mt. Tögyusan, JB, 27, VII, 1983).
8. *Leptocarabus (Weolseocarabus) koreanus koreanus* subgen. nov. (Mt. Kümjöngsan, GN, 21, IX, 1982).
9. *Leptocarabus (Weolseocarabus) koreanus koreanus* subgen. nov. (Is. Kōjedo, GN, 15, VI, 1977).
- 10,11. *Leptocarabus (Weolseocarabus) koreanus minqr* subgen. et subsp. nov. (Mt. Sobaeksan, GB, 23, VII, 1977).
12. *Leptocarabus (Adelocarabus) semiopacus* (Mt. Sölaksan, GW, 12, VIII, 1969).
13. *Leptocarabus (Adelocarabus) semiopacus* (Mt. Sölaksan, GW, 9, VIII, 1976).
14. *Leptocarabus (Adelocarabus) semiopacus* (Mt. Sobaeksan, GB, 23, VII, 1977).
15. *Leptocarabus (Adelocarabus) semiopacus* Mt. Kyeryongsan, CN, 14, IX, 1975).
16. *Leptocarabus (Adelocarabus) semiopacus* (Mt. Hwanghaksan, GB, 29, IX, 1982).
- 17,18. *Leptocarabus (Adelocarabus) semiopacus* (Mt. P'algongsan, GB, 10, IX, 1982).
19. *Leptocarabus (Adelocarabus) semiopacus* (Mt. Tögyusan, JB, 22, VIII, 1977).
20. *Leptocarabus (Adelocarabus) semiopacus* (Mt. Chirisan, GN, 13, VII, 1981).

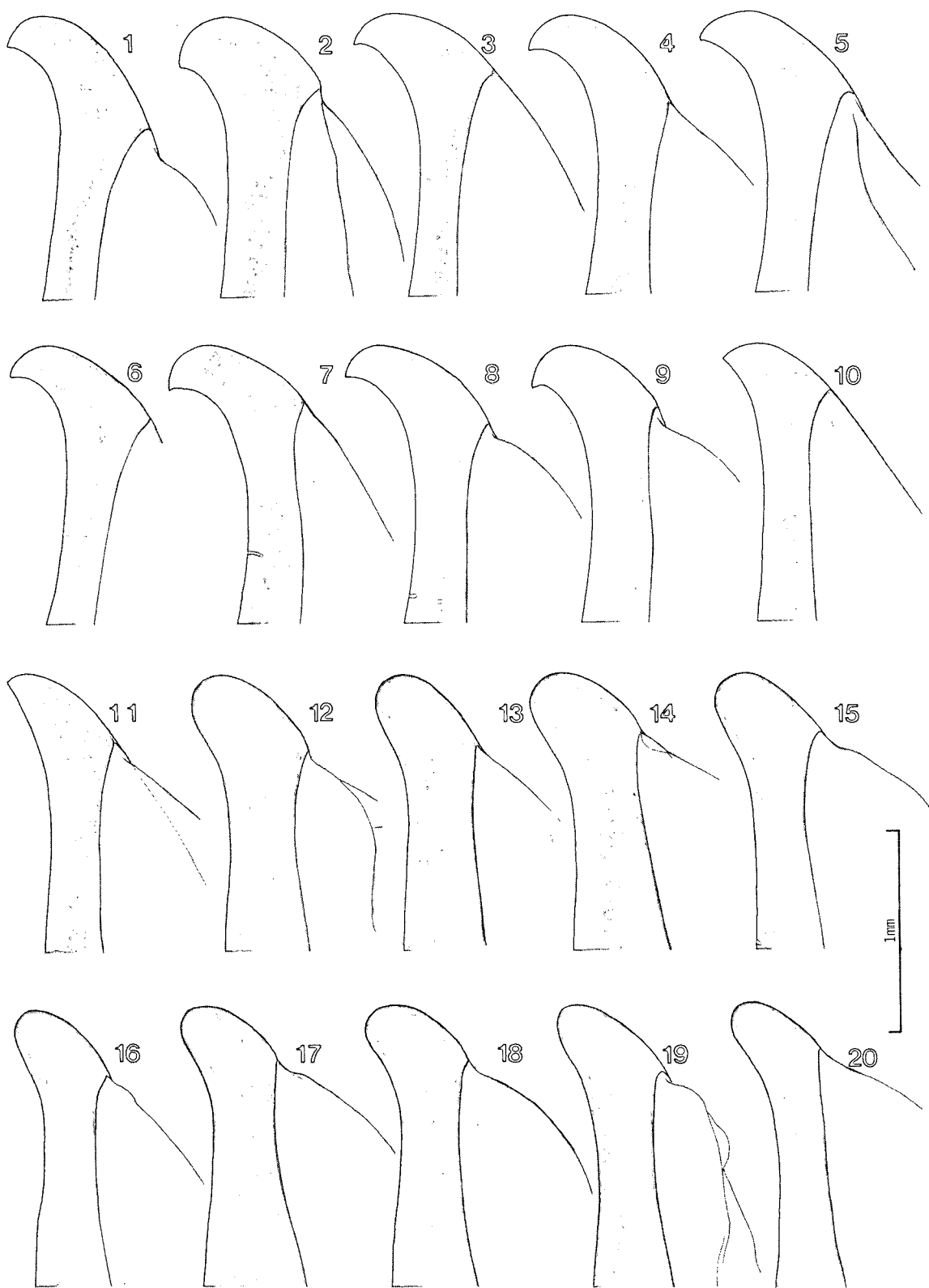


Plate XLIX.

Apical parts of aedeagi of carabids in lateral view (8).

1. *Leptocarabus (Adelocarabus) semiopacus* (Mt. Chirisan, GN, 12, VI, 1983).
2. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Sölaksan, GW, 30, VII, 1982).
3. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Sölaksan, GW, 12, VIII, 1969).
4. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Sogŭmgang, GW, 7, IX, 1980).
5. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Odaesan, GW, 18, IX, 1982).
6. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Pangadaesan, GW, 28, VII, 1974).
- 7,8. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Myongjisan, GG, 7, VI, 1976).
9. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Pukhansan, GG, 12, VII, 1976).
10. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Seoul, GG, 23, VIII, 1972).
- 11,12. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Tögam-san, GG, 6, IX, 1976).
13. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. T'aebaeksan, GW, 27, VI, 1976).
14. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. P'algongsan, GB, 3, IX, 1982).
15. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. P'algongsan, GB, 10, IX, 1982).
16. *Leptocarabus (Adelocarabus) seishinensis seunglaki* subsp. nov. (Mt. Chirisan, GN, 13, VII, 1981).
17. *Leptocarabus (Adelocarabus) seishinensis seunglaki* subsp. nov. (Mt. Chirisan, GN, 6, VI, 1983).
18. *Leptocarabus (Adelocarabus) arboreus arboreus* (Aizan-kei, Mt. Daisetsuzan, Hokkaido, Japan, 12-15, VII, 1970).
19. *Leptocarabus (Adelocarabus) exilis babai* (Mt. Tengu-harayama, Nagano Pref., Honshu, Japan, 15, IX, 1969).
20. *Leptocarabus (Astenocarabus) opaculus kurosawai* (Aizan-kei, Mt. Daisetsuzan, Hokkaido, Japan, 12-15, VII, 1970).

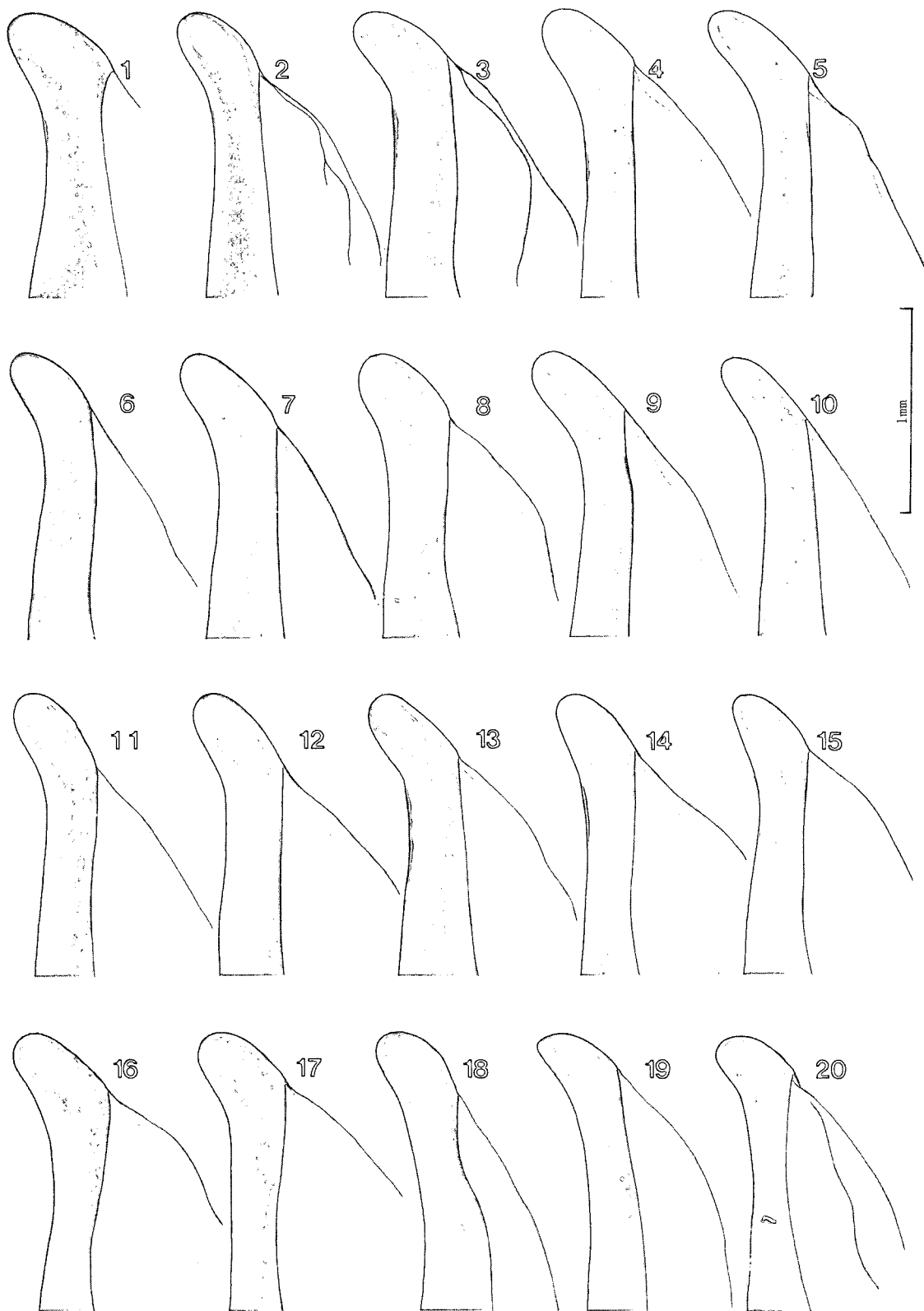


Plate L.

Apical parts of aedeagi of carabids in lateral view (9).

1. *Leptocarabus (Pentacarabus) harmandi okutamaensis* (Mt. Mitsutogeyama, Yamanashi Pref., Honshu, Japan, 2, VI, 1971).
2. *Hemicarabus* (s. str.) *tuberculosis* (Mt. Samnipsan, HB, ?, VI, 1930).
3. *Hemicarabus* (s. str.) *tuberculosis* (Pujölyöng, HN, 27, VII, 1933).
4. *Hemicarabus* (s. str.) *tuberculosis* (Mt. Odaesan, GW, 5, VIII, 1971).
5. *Hemicarabus* (s. str.) *tuberculosis* (Kwangnüng, GG, 27, IV, 1969).
6. *Hemicarabus* (s. str.) *tuberculosis* (Mt. Hallasan, JJ, 18, VII, 1978).
7. *Hemicarabus* (s. str.) *tuberculosis* (Mt. Hallasan, JJ, 30, VII, 1972).
8. *Hemicarabus* (s. str.) *tuberculosis* (Oiwake Pass, Hidaka, Hokkaido, Japan, 22, VIII, 1971).
9. *Hemicarabus* (s. str.) *macleayi coreensis* (Unsuröng, HN, 28, VII, 1936).
- 10,11. *Hemicarabus (Homoeocarabus) maeander quelpartensis* subsp. nov. (Hallasan, JJ, 20, VI, 1968).
- 12,13. *Scambocarabus kruberi hallasanensis* subsp. nov. (Mt. Hallasan, JJ, 8, VI, 1972).
14. *Cathaicus brandti* (Shienhien, China, 15, VI, 1936).
15. *Tomocarabus fraterculus fraterculus* (Unsuröng, HN, 16, VII, 1935).
16. *Tomocarabus fraterculus affinis* subsp. nov. (Mt. Sölaksan, GW, 29, VII, 1971).
- 17,18. *Tomocarabus fraterculus affinis* subsp. nov. (Mt. Odaesan, GW, 18, IX, 1982).
- 19,20. *Tomocarabus fraterculus affinis* subsp. nov. (Mt. Myöngjisan, GG, 27, V, 1978).

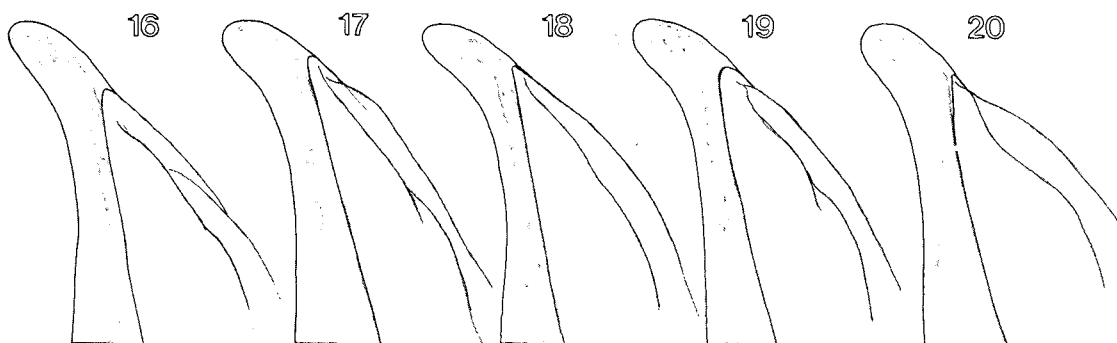
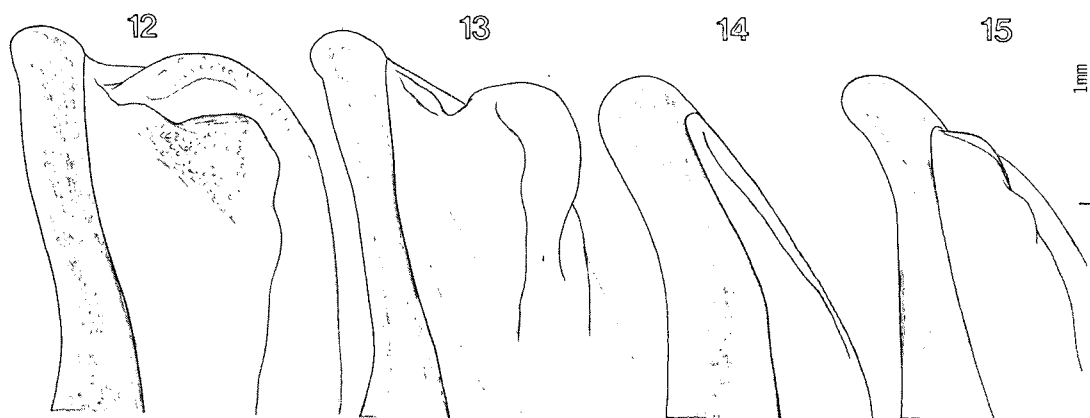
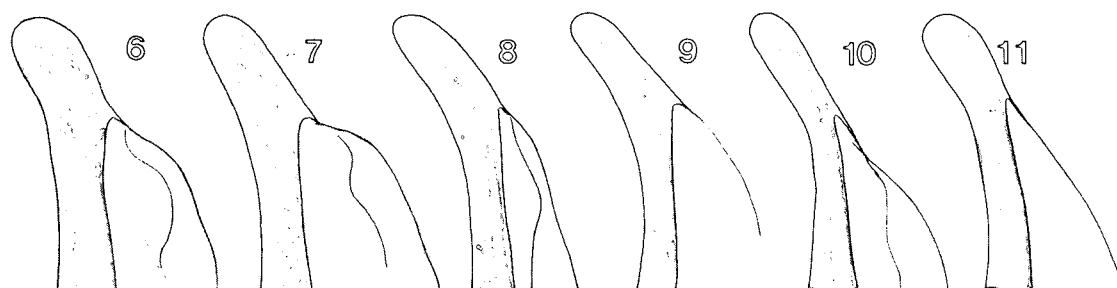
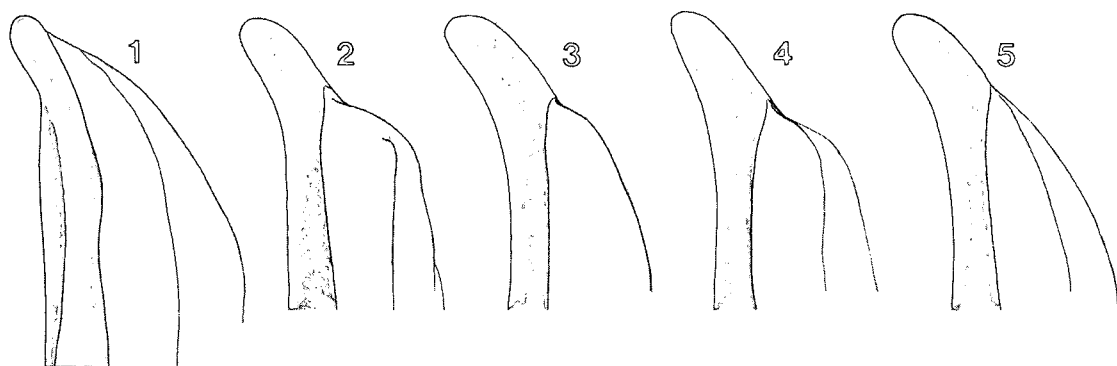
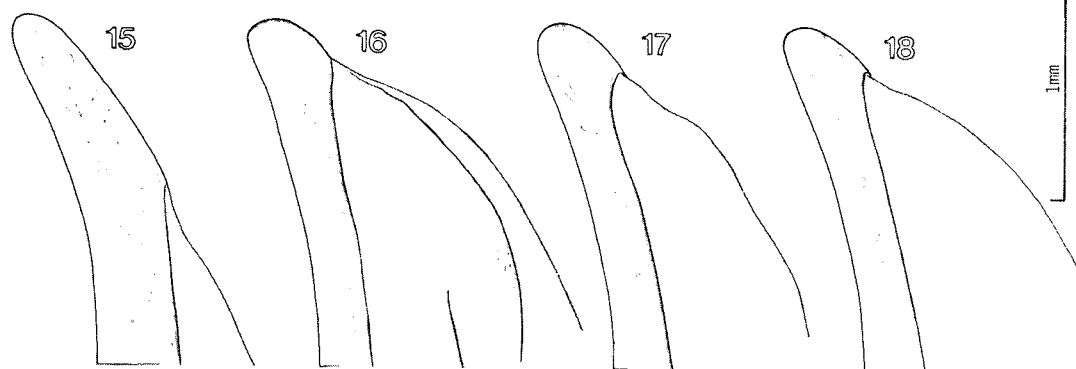
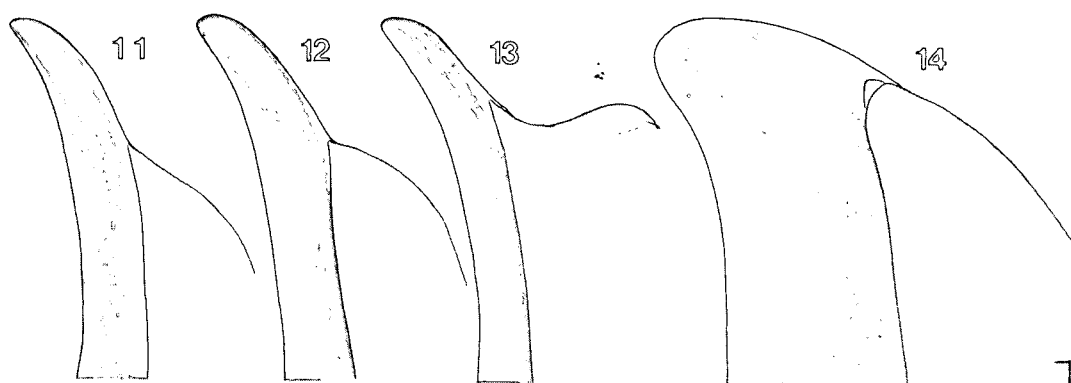
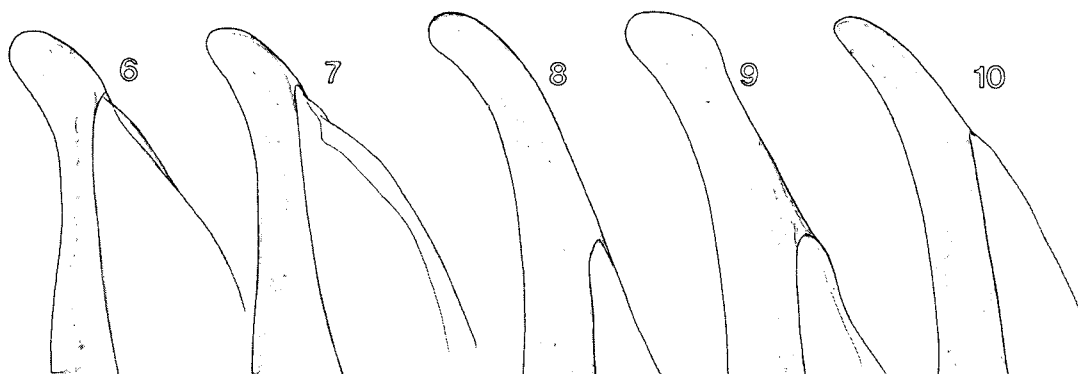
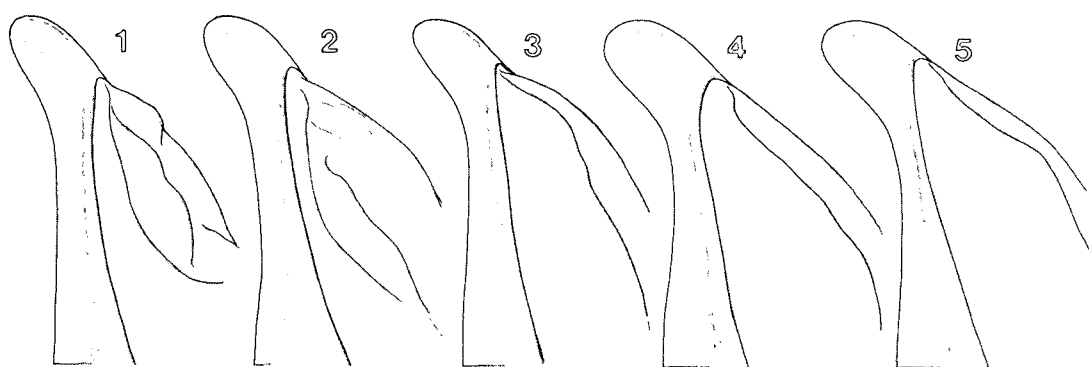


Plate LI.

Apical parts of aedeagi of carabids in lateral view (10).

- 1,2. *Tomocarabus fraterculus assimilis* subsp. nov. (Mt. T'aebaeksan GW, 27, VI, 1976).
3. *Tomocarabus fraterculus assimilis* subsp. nov. (Mt. Sobaeksan, GB, 6, VI, 1981).
- 4,5. *Tomocarabus fraterculus assimilis* subsp. nov. (Mt. P'algongsan, GB, 24, V, 1983).
- 6,7. *Tomocarabus fraterculus yeongsiki* subsp. nov. (Mt. Chirisan, GN, 13, VII, 1981).
8. *Megodontus* (s. str.) *purpurascens crenatocostatus* (Bruxelle, Belgium, ?, VI, 1975).
9. *Megodontus* (s. str.) *violaceus candisatus* (Bayrischer Wald, Buchenau, Germany, 14, IX, 1975).
10. *Megodontus* (*Ainocarabus*) *kolbei kolbei* (Mt. Apoidake, Hidaka, Hokkaido, Japan, 26, VIII, 1971).
11. *Megodontus* (*Ainocarabus*) *kolbei aino* (Aizankai, Mt. Daisetsuzan, Hokkaido, Japan, 12-15, VII, 1970).
12. *Megodontus* (*Ainocarabus*) *kolbei kosugei* (Mt. Shakotandake, Shiribeshi, Hokkaido, Japan, 18-24, VIII, 1972).
13. *Megodontus* (*Ainocarabus*) *kolbei munakataorum* (Mt. Daisengen, Oshima, Hokkaido, Japan, 1, IX, 1971).
14. *Procrustes coriaceus* (Munnes Tadder Wald, bei Kissingen, Unterfranken, Germany, 10, IX, 1976).
15. *Autocarabus auratus lotharingus* (Montpellier, France, 30, III, 1975).
16. *Damaster* (*Koreacoptolabrus*) *constricticollis constricticollis* subgen. nov. (Mt. Odaesan, GW, 9, VIII, 1976).
17. *Damaster* (*Koreacoptolabrus*) *constricticollis constricticollis* subgen. nov. (Mt. T'aebaeksan, GW, 28, VI, 1976).
18. *Damaster* (*Koreacoptolabrus*) *constricticollis chircicola* subgen. et subsp. nov. (Mt. Chirisan, GN, 6, VI, 1983).



1mm

Plate LII.

Apical parts of aedeagi of carabids in lateral view (11).

1. *Damaster (Koreacoptolabrus) mirabilissinus* subgen. nov. (Mt. T'aebaeksan, GW, 27, VI, 1976).
2. *Damaster (Koreacoptolabrus) mirabilissinus* subgen. nov. (Mt. Sobaeksan, GB, 24, VII, 1977).
3. *Damaster (Koreacoptolabrus) mirabilissinus* subgen. nov. (Mt. Sobaeksan, GB, 6, VI, 1981).
4. *Damaster (Acoptolabrus) gehini gehini* (Jyozankei, Sapporo, Hokkaido, Japan, 24, VI, 1979).
5. *Damaster (Acoptolabrus) gehini radiatocostatus* (Oiwake Pass, Hidaka, Hokkaido, Japan, 27-30, VIII, 1972).
6. *Damaster (Acoptolabrus) gehini sapporensis* (Mt. Apoidake, Hidaka, Hokkaido, Japan, 5-8, VIII, 1970).
7. *Damaster (Acoptolabrus) gehini munakatai* (Mt. Daisengendake, Hokkaido, Japan, 19-23, VIII, 1973).
8. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Sölaksan, GW, 5, VIII, 1969).
9. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Sölaksan, GW, 21, VIII, 1969).
10. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Pangdaesan, GW, 27, VII, 1974).
- 11,12. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Wangbangsan, GG, 6, VIII, 1976).
13. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Myöngjisan, GG, 27, V, 1978).
14. *Damaster (Coptolabrus) jankowskii jankowskii* (Kwangnŭng, GG, 15, VIII, 1971).
- 15,16. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Aengmubong, GG, 15, VI, 1976).
17. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Pukhansan, GG, 11, VII, 1976).
18. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Tobongsan, GG, 19, VIII, 1976).
- 19,20. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Tögam-san, GG, IX, 1976).

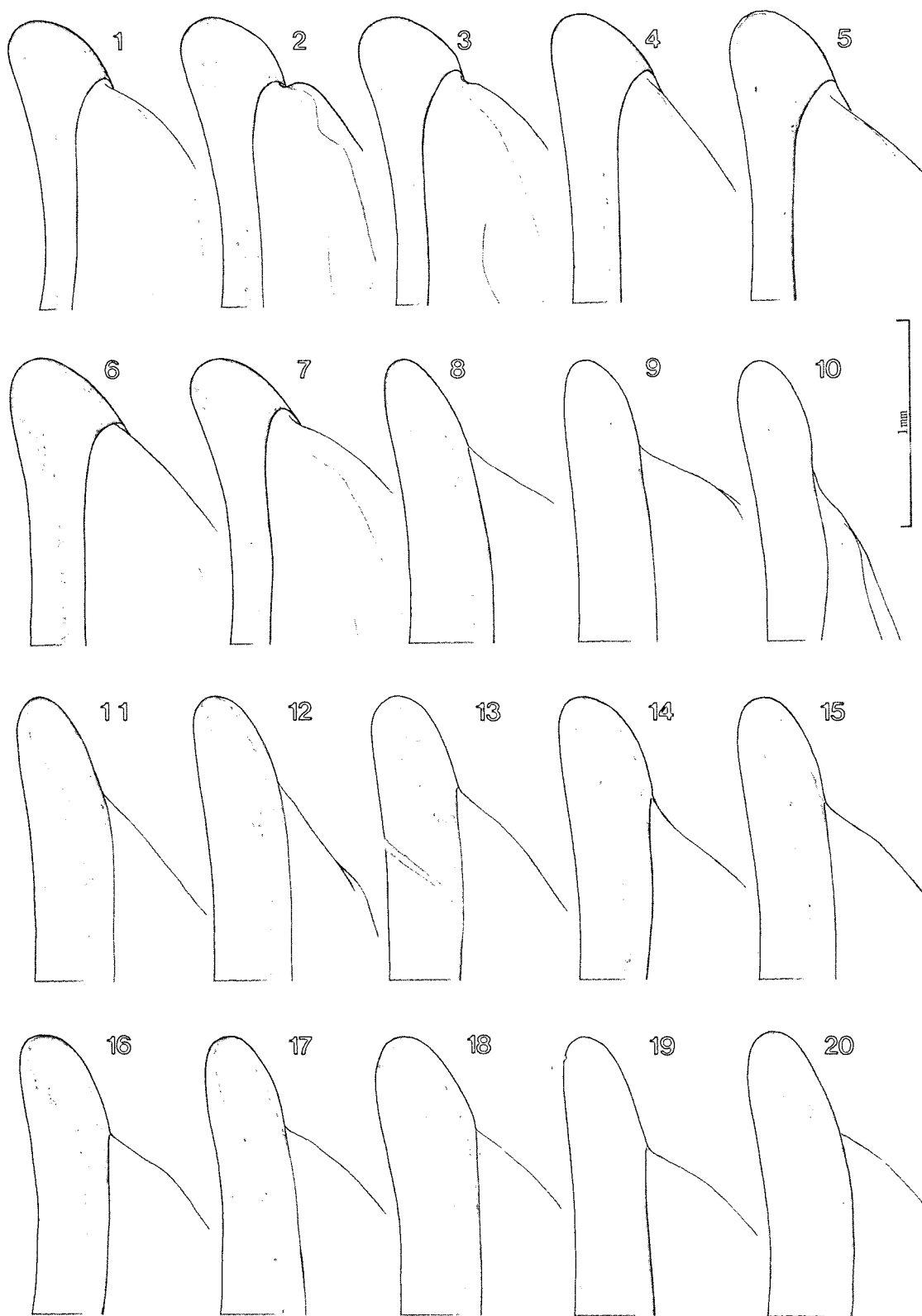


Plate LIII.

Apical parts of aedeagi of carabids in lateral view (12).

1. *Damaster (Coptolabrus) jankowskii jankowskii* (Konjam, GG, 1, VIII, 1976).
2. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Yongmunsan, GG, 14, IX, 1980).
3. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Ch'iaksan, GW, 14, VI, 1976).
- 4,5. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Sobaeksan, GB, 23, VII, 1977).
- 6,7. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Kyeryongsan, CN, 14, IX, 1975).
- 8,9. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Songnisan, CB, 10 VI, 1977).
- 10,11. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. P'alongsan, GB, 10, IX, 1982).
- 12,13. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. T'ohamsan, GB, 22, IX, 1982).
- 14,15. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Chogyesan, JN, 5, VI, 1983).
16. *Damaster (Coptolabrus) jankowskii kangwonensis* subsp. nov. (Mt. Odaesan, GW, 9, VIII, 1976).
17. *Damaster (Coptolabrus) jankowskii kangwonensis* subsp. nov. (Mt. Odaesan, GW, 5, VIII, 1971).
- 18,19. *Damaster (Coptolabrus) jankowskii kangwonensis* subsp. nov. (Mt. T'aebaeksan, GW, 27, VI, 1976).
20. *Damaster (Coptolabrus) jankowskii elegans* subsp. nov. (Mt. Chirisan, GN, 12, VI, 1983).

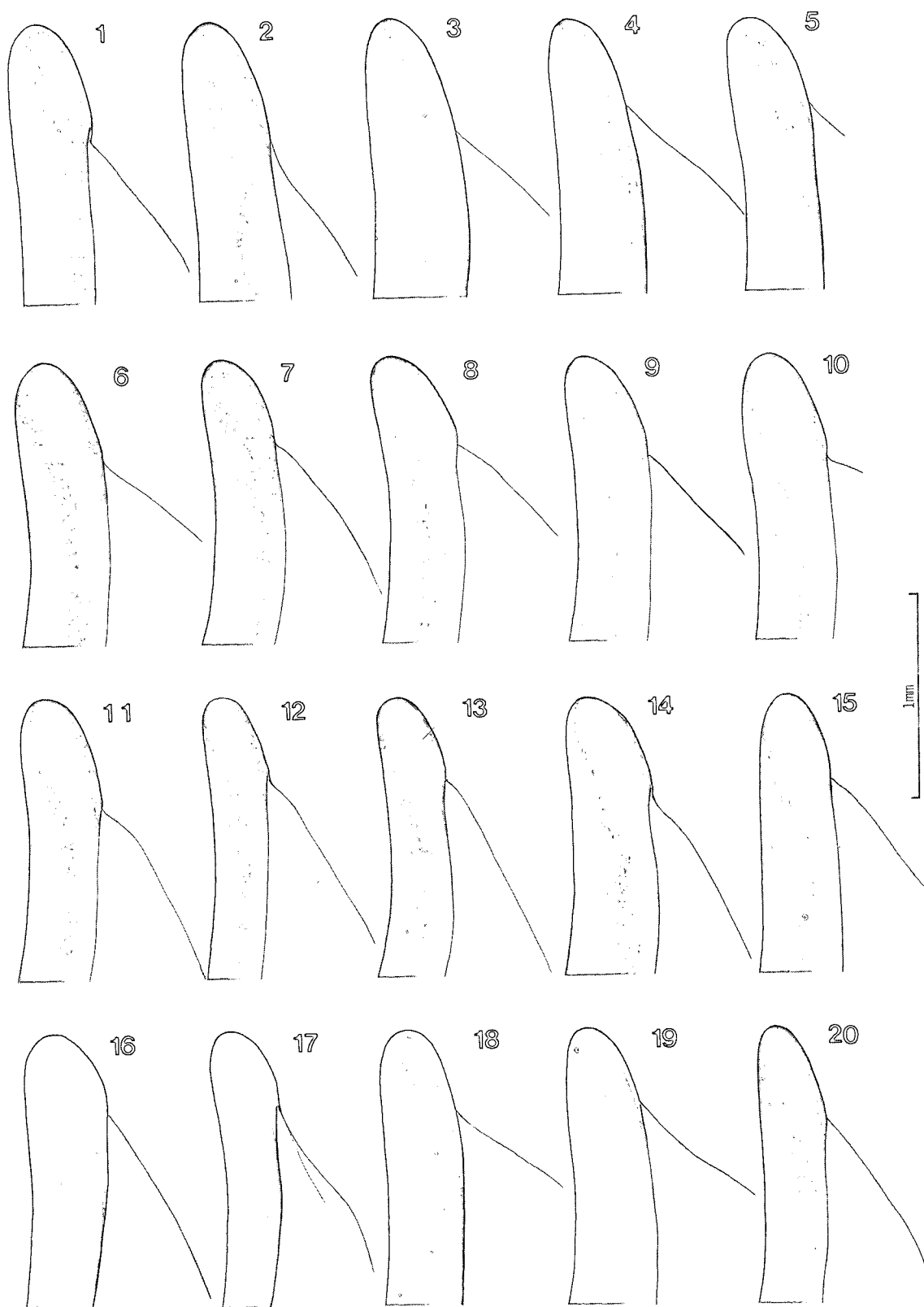


Plate LIV.

Apical parts of aedeagi of carabids in lateral view (13).

1. *Damaster (Coptolabrus) jankowskii elegans* subsp. nov. (Mt. Chirisan, GN, 12, VI, 1983).
2. *Damaster (Coptolabrus) jankowskii fusanus* (Pusan, GN, 3, VI, 1977).
- 3,4. *Damaster (Coptolabrus) jankowskii kojensis* (Is. Kōjedo, GN, 22-31, VII, 1969).
- 5,6. *Damaster (Coptolabrus) jankowskii kojensis* (Mt. Kūmsan in Is. Namhaedo, GN, 13, VI, 1977).
7. *Damaster (Coptolabrus) jankowskii quelpartianus* (Mt. Hallasan, JJ, 22, VI, 1976).
8. *Damaster (Coptolabrus) jankowskii quelpartianus* (Mt. Hallasan, JJ, 18, VII, 1978).
9. *Damaster (Coptolabrus) jankowskii quelpartianus* (Chungmun, JJ, 20, VII, 1978).
- 10,11. *Damaster (Coptolabrus) fruhstorferi* (Mt. Mitake, Is. Tsushima, Nagasaki Pref., Japan, 27, IV, 1972).
12. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Kūmgangsan, GW, ?, VIII, 1935).
13. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Sōlaksan, GW, 12, VIII, 1969).
14. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Sōlaksan, GW, 9, VIII, 1969).
- 15,16. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Odaesan, GW, 9, VIII, 1976).
17. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Sogūmgang, GW, 28, VII, 1971).
18. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Pangdaesan, GW, 30, VII, 1974).
19. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Yongmunsan, GG, 14, IX, 1980).
20. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. T'aebaeksan, GW, 28, VI, 1976).

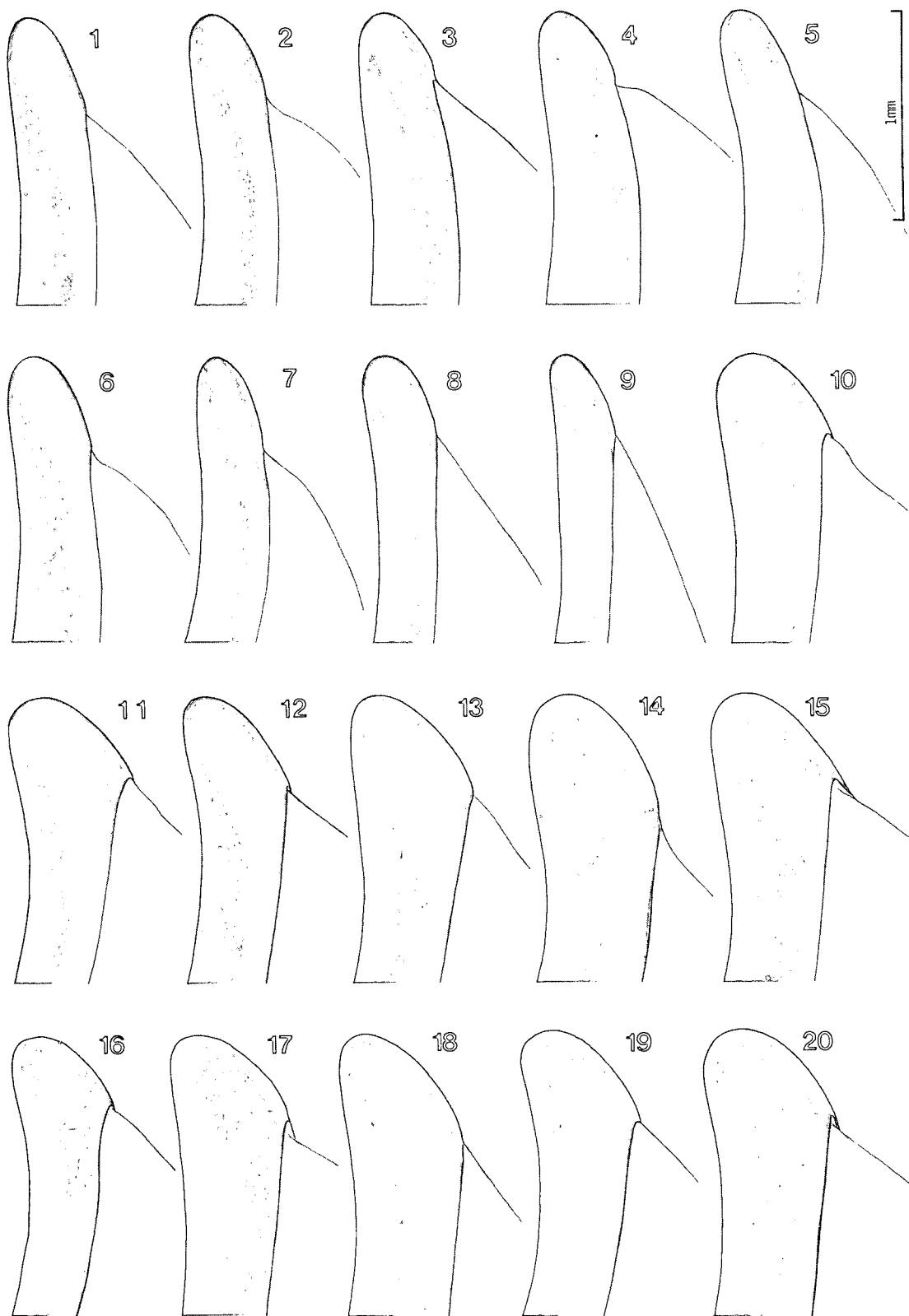


Plate LV.

Apical parts of aedeagi of carabids in lateral view (14).

1. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. T'aebaeksan, GW, 28, VI, 1976).
2. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Sobaeksan, GB, 24, VII, 1977).
- 3,4. *Damaster (Coptolabrus) smaragdinus branickii* (Kwangnŭng, GG, 3, IX, 1971).
5. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Pukhansan, GG, 12, VII, 1976).
6. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Tobongsan, GG, 19, VIII, 1976).
7. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Ch'ŏnmasan, GG, 9, IX, 1980).
- 8,9. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Wangbangsan, GG, 9, VIII, 1976).
10. *Damaster (Coptolabrus) smaragdinus branickii* (Konjiam, GG, 6, IX, 1976).
- 11,12. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Ch'iaksan, GW, 2, VIII, 1982).
- 13,14. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Kyeryongsan, CN, 14, IX, 1975).
15. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Songnisan, CB, 10, VI, 1977).
16. *Damaster (Coptolabrus) smaragdinus branickii* (Koesan, CB, 28, VII, 1978).
- 17,18. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. P'algongsan, GB, 24, V, 1983).
19. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. T'ohamsan, GB, 22, IX, 1982).
20. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Yŏngch'wisan, GN, 2, VI, 1983).

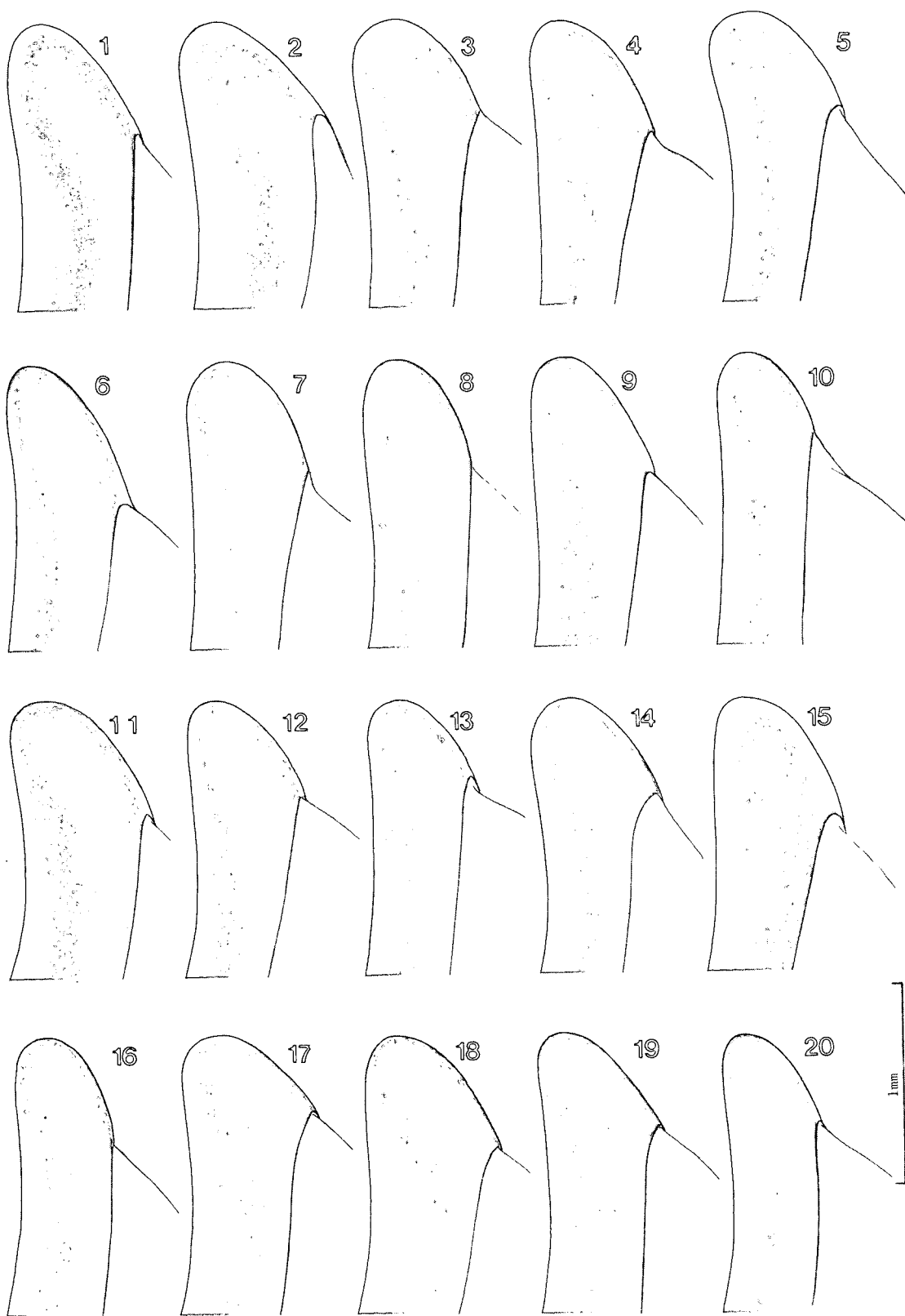


Plate LVI.

Apical parts of aedeagi of carabids in lateral view (15).

1. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Yŏngch'wisan, GN, 2, VI, 1983).
2. *Damaster (Coptolabrus) smaragdinus branickii* (Hamyang, GN, 31, VII, 1980).
- 3,4. *Damaster (Coptolabrus) smaragdinus branickii* (Sanin Myŏn, GN, 28, V, 1983).
5. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Muhaksan, GN, 24, IX, 1982).
- 6,7. *Damaster (Coptolabrus) smaragdinus branickii* (Is. Kŏjedo, GN, 16-20, VII, 1970).
8. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Naejangsan, JB, 6, VI, 1968).
9. *Damaster (Coptolabrus) smaragdinus branickii* (Koch'ang, JB, 31, V, 1973).
10. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Yudalsan, JN, 19, VI, 1976).
11. *Damaster (Coptolabrus) smaragdinus hongdoensis* subsp. nov. (Is. Hongdo, JN, 10, VIII, 1981).
12. *Damaster (Coptolabrus) smaragdinus sangjaei* subsp. nov. (Mt. Chirisan, GN, 6, VI, 1983).
13. *Damaster (Coptolabrus) smaragdinus hoenggandoensis* subsp. nov. (Is. Hoenggando, JJ, 4, VIII, 1970).
- 14,15. *Damaster (Coptolabrus) smaragdinus monilifer* (Mt. Hallasan, JJ, 29, VII, 1978).
- 16,17. *Damaster* (s. str.) *blaptoides rugipennis* (Asahigawa, Hokkaido, Japan, 8, VII, 1977).
18. *Damaster* (s. str.) *blaptoides capito* (Mt. Kinpokusan, Is. Sado, Niigata Pref., Honshu, Japan, 2-5, III, 1971).
19. *Damaster* (s. str.) *blaptoides fortunei* (Is. Awashima, Niigata Pref., Honshu, Japan, 31, III, 1970).
20. *Damaster* (s. str.) *blaptoides oxuroides* (Kizoro, Saitama Pref., Honshu, Japan, ?, III, 1968).

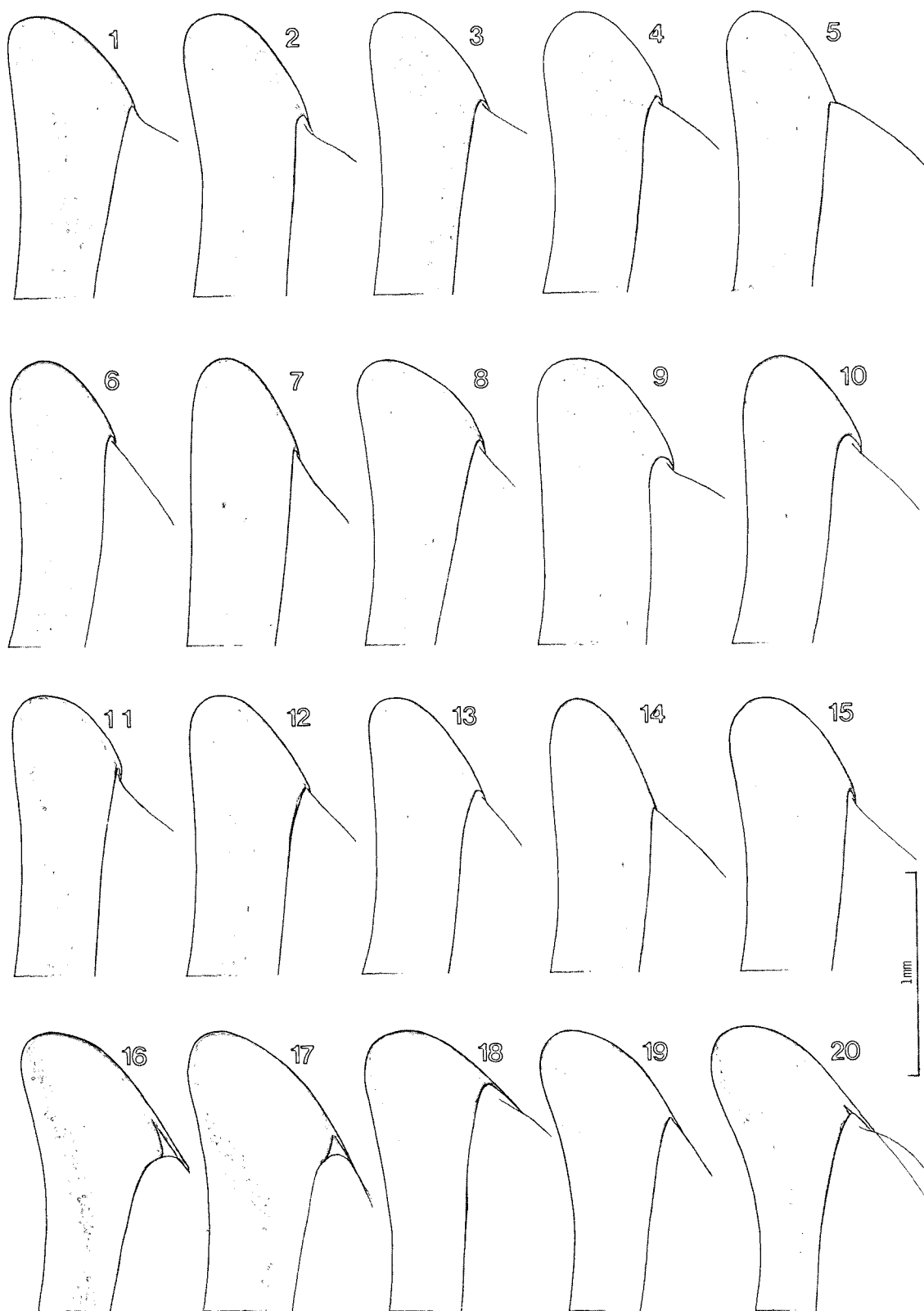


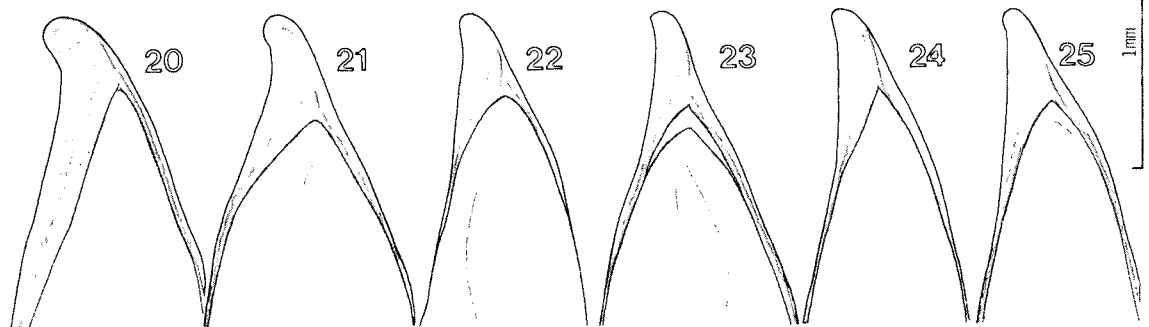
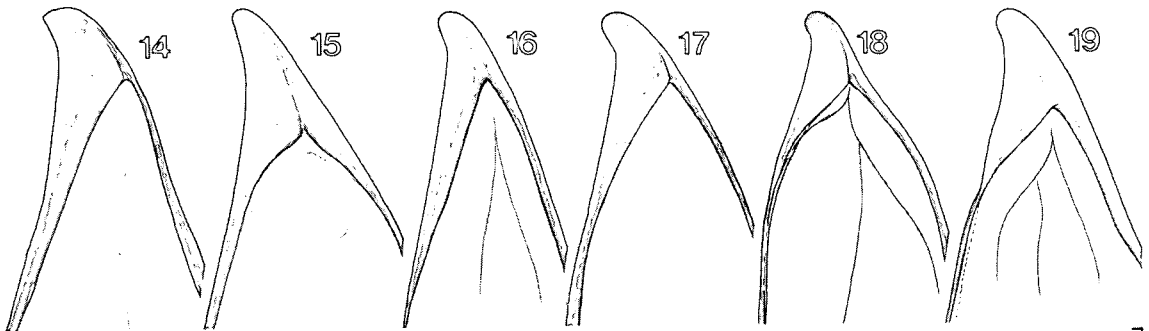
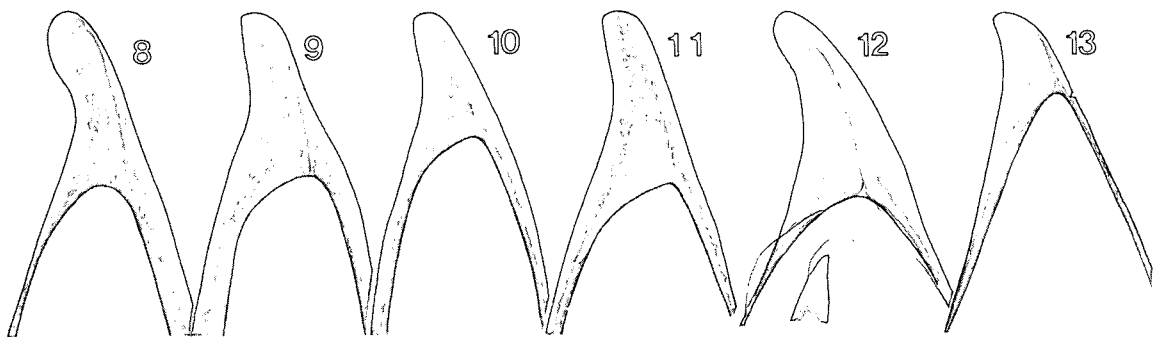
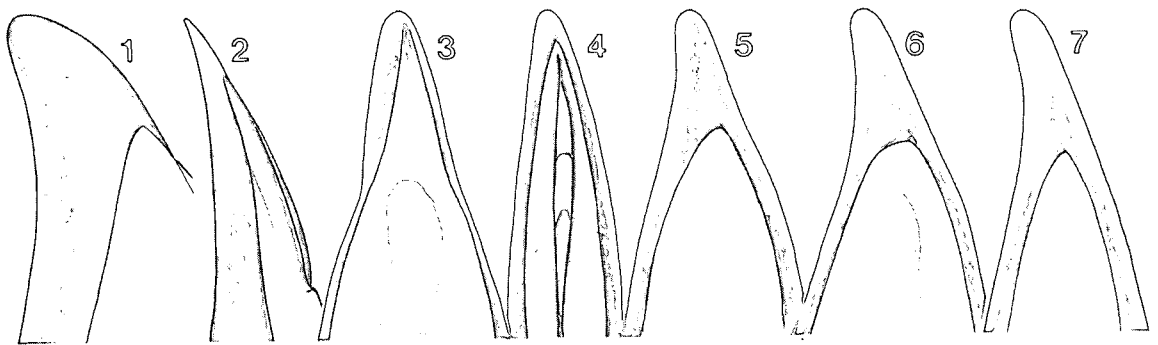
Plate LVII.

Apical parts of aedeagi of carabids in lateral view (16).

1. *Damaster* (s. str.) *blaptoides montanus* (Mt. Adatarasan, Fukushima Pref., Honshu, Japan, 8, IV, 1970).
2. *Cychnus morawitzi* (Mt. Apoidake, Hidaka, Hokkaido, Japan, 26, VIII, 1971).

Apical parts of aedeagi of carabids in dorsal view (1).

3. *Calosoma maximowiczii* (Mt. Ch'ŏnmasan, GG, 28, V, 1972).
4. *Calosoma maximowiczii* (Mt. Hallasan, JJ, 30, VII, 1972).
5. *Calosoma inquisitor cyanescens* (Nanam, HB, 10, VI, 1929).
6. *Calosoma inquisitor cyanescens* (Mt. Myōngjisan, GG, 27, V, 1978).
7. *Calosoma inquisitor cyanescens* (Is. Ullūngdo, GB, 8, VI, 1963).
8. *Charmosta lugens* (Ch'ōngjin, HB, ?, VIII, 1929).
9. *Campalita chinense* (Seoul, GG, 14, VIII, 1971).
10. *Campalita chinense* (Kamishihoro, Tokachi, Hokkaido, Japan, 23, VII, 1970).
11. *Campalita chinense* (Ippongi, Saitama Pref., Honshu, Japan, ?, VII, 1968).
12. *Apotomopterus* (*Limnocarabus*) *clathratus aquatilis* comb. nov. (Chikauchi, Miyako City, Honshu, Japan, 30, VII, 1973).
13. *Apotomopterus* (*Euleptocarabus*) *porrecticollis porrecticollis* (Mt. Sotoyama, Nikko, Tochigi Pref., Honshu, Japan, 3, XI, 1969).
14. *Apotomopterus* (*Euleptocarabus*) *porrecticollis kansaiensis* (Kameoka City, Kyoto Pref., Honshu, Japan, 15, I, 1966).
15. *Apotomopterus* (s. str.) *sauteri* (Tengchih, Kaoshunsien, Taiwan, ?, VIII, 1975).
16. *Carabus* (s. str.) *granulatus granulatus* (Kissingen, Unterfranken, Germany, 1, III, 1976).
17. *Carabus* (s. str.) *granulatus granulatus* (Kissingen, Unterfranken, Germany, 19, XI, 1975).
18. *Carabus* (s. str.) *granulatus granulatus* (Bohemia, Pisek, Czechoslovakia, ?, VI, 1965).
19. *Carabus* (s. str.) *granulatus ussuriensis* (Mt. Kwanmobong, HB, 18, VII, 1932).
20. *Carabus* (s. str.) *granulatus telluris* (Fukushimagata, Tsukioka Pref., Honshu, Japan, 31, III, 1969).
21. *Carabus* (s. str.) *granulatus yezoensis* (Kawayu, Kushiro, Hokkaido, Japan, 10, VII, 1969).
22. *Carabus* (*Eutelocarabus*) *arvensis germaniae* (Hoffenheim, Gr. Wald, Germany, ?, VI, 1974).
23. *Carabus* (*Eutelocarabus*) *conciliator faldermanni* (Seoul, GG, ?, VII, 1961).
24. *Carabus* (*Eutelocarabus*) *conciliator hokkaidensis* (Aizankei, Mt. Daisetsuzan, Hokkaido, Japan, 12-15, VII, 1970).
25. *Carabus* (*Eutelocarabus*) *conciliator hokkaidensis* (Mt. Apoidake, Hidaka, Hokkaido, Japan, 5-9, VIII, 1970).



# Plate LVIII.

## Apical parts of aedeagi of carabids in dorsal view (2).

1. *Carabus (Isiocarabus) fiduciarius kirinicus* (Mt. Un'gilsan, GG, 22, V, 1983).
- 2,3. *Carabus (Isiocarabus) fiduciarius saishutoicus* (Mt. Hallasan, JJ, 28, VII, 1978).
4. *Carabus (Ohomopterus) dehaanii dehaanii* (Mt. Hieizan, Kyoto Pref., Honshu, Japan, 15, I, 1967).
5. *Carabus (Ohomopterus) dehaanii strenus* (Mt. Sobozan, Ohita Pref., Kyushu, Japan, 29, XII, 1969).
6. *Carabus (Ohomopterus) japonicus japonicus* (Mt. Sobozan, Ohita Pref., Kyushu, Japan, 29, XII, 1969).
7. *Carabus (Ohomopterus) japonicus tsushima* (Mt. Mitake, Is. Tsushima, Nagasaki Pref., Japan, 27, III, 1972).
8. *Carabus (Ohomopterus) lewisianus awakazusanus* (Mt. Tomisan, Chiba Pref., Honshu, Japan, 2, I, 1969).
9. *Carabus (Ohomopterus) albrechti freyi* (Ogi, Is. Sadogashima, Honshu, Japan, 21, XI, 1971).
10. *Carabus (Ohomopterus) yamato* (Mt. Katsuragisan, Nara Pref., Honshu, Japan, 30, V, -4, VI, 1975).
11. *Carabus (Ohomopterus) esakii* (Izu Peninsula, Shizuoka Pref., Honshu, Japan, 20, XII, 1973).
12. *Carabus (Ohomopterus) yaconinus yaconinus* (Mt. Hanataka, Shimane Pref., Honshu, Japan, 20, III, 1969).
13. *Carabus (Ohomopterus) yaconinus iwawakianus* (Mt. Iwawakisan, Osaka Pref., Honshu, Japan, 27-29, V, 1977).
14. *Carabus (Ohomopterus) insulicola insulicola* (Kizoro, Saitama Pref., Honshu, Japan, ?, II, 1968).
15. *Carabus (Ohomopterus) insulicola arrowianus* (Mt. Honguzan, Aichi Pref., Honshu, Japan, 17, VI, 1968).
16. *Carabus (Ohomopterus) insulicola nishigawai* (Kanamurubata, Bosohanto, Chiba Pref., Honshu, Japan, 1, I, 1969).
17. *Carabus (Ohomopterus) insulicola maiyasanus* (Yamanomachi, Kobe City, Honshu, Japan, 1, III, 1970).
18. *Carabus (Ohomopterus) uenoi* (Mt. Katsuragisan, Nara Pref., Honshu, Japan, 30, V, -4, VI, 1975).
19. *Carabus (Eucarabus) ullrichi ullrichi* (Slov., Lipt., Osada, Czechoslovakia, ?, VIII, 1968).
- 20,21. *Carabus (Parhomopterus) sternbergi cartereti* (Mt. Sölaksan, GW, 27, VII, 1982).
- 22,23,24. *Carabus (Parhomopterus) sternbergi cartereti* (Mt. Odaesan, GW, 18, IX, 1982).

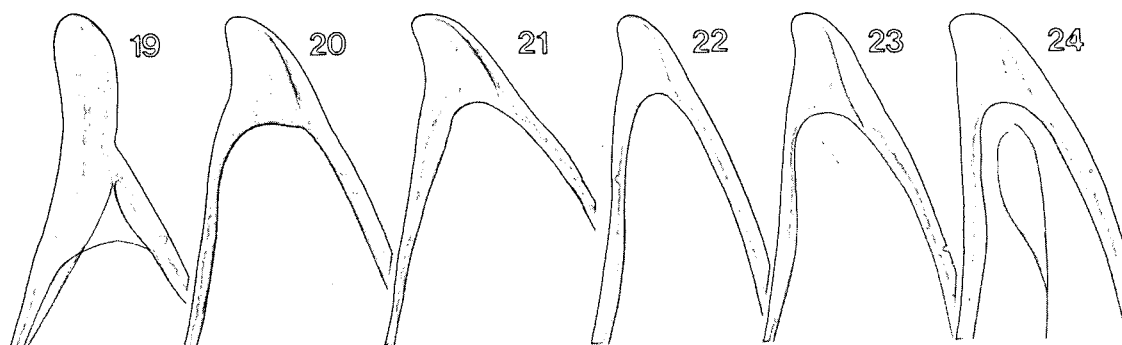
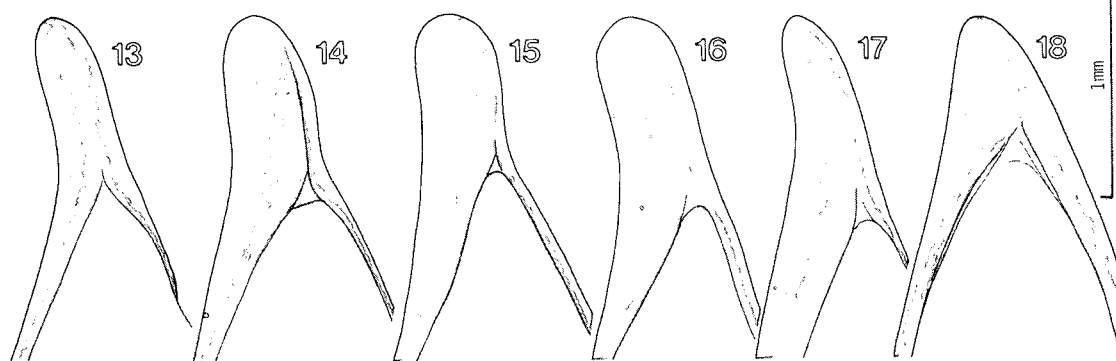
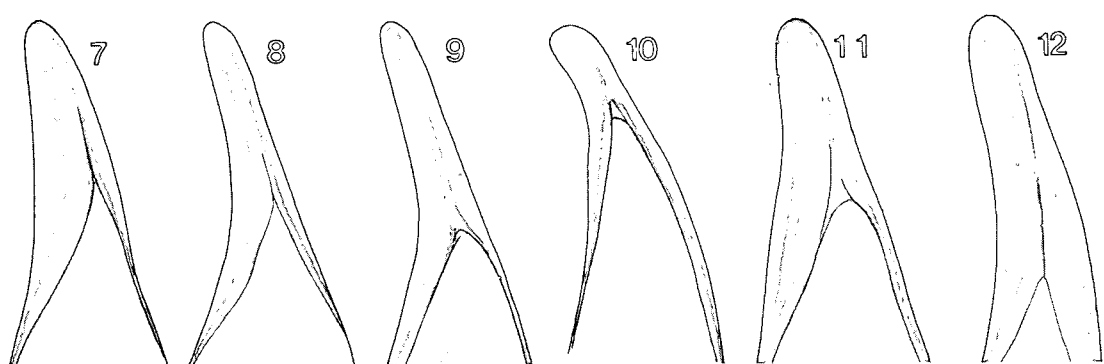
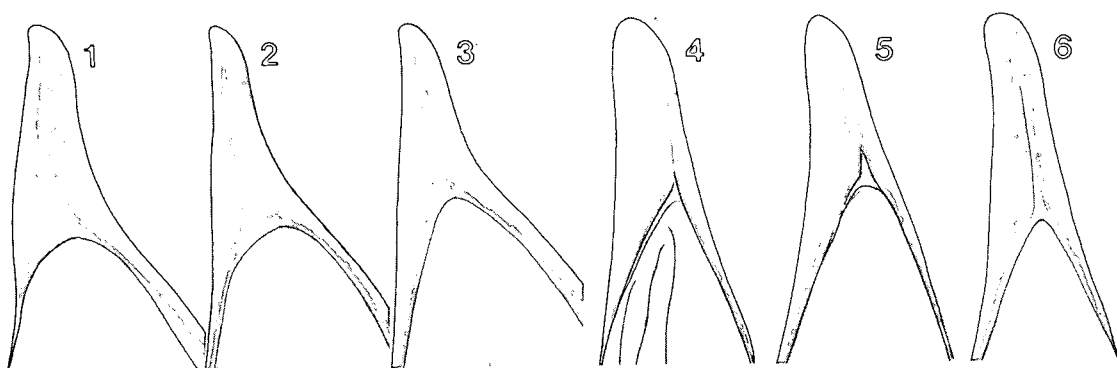


Plate LIX.

Apical parts of aedeagi of carabids in dorsal view (3).

1. *Carabus (Parhomopterus) sternbergi cartereti* (Mt. Sogŭmgang, GW, 7, IX, 1980).
- 2,3. *Carabus (Parhomopterus) sternbergi cartereti* (Mt. T'aebaeksan, GW, 27, VI, 1976).
- 4,5. *Carabus (Parhomopterus) sternbergi sobaeksanensis* subsp. nov. (Mt. Sobaeksan, GB, 24, VII, 1977).
6. *Carabus (Parhomopterus) sternbergi sobaeksanensis* subsp. nov. (Mt. Chuhŭlsan, GB, 5, VI, 1983).
- 7,8. *Carabus (Parhomopterus) sternbergi palgongsanensis* subsp. nov. (Mt. P'algongsan, GB, 10, IX, 1982).
9. *Carabus (Parhomopterus) sternbergi tongdosanus* subsp. nov. (Mt. Sinbulsan, GN, 25, IX, 1982).
- 10,11. *Carabus (Parhomopterus) sternbergi chirisanensis* subsp. nov. (Mt. Chirisan, GN, 13, VII, 1981).
12. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Pangdaesan, GW, 27, VI, 1974).
13. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Pangdaesan, GW, 30, VII, 1974).
14. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Myŏngjisan, GG, 6, VI, 1976).
- 15,16. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Soyosan, GG, 5, VI, 1977).
17. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Aengmubong, GG, 26, VI, 1971).
18. *Carabus (Parhomopterus) sternbergi sternbergi* (Kwangnŭng, GG, 15, VIII, 1971).
19. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Ch'ŏnmasan, GG, 16, V, 1972).
20. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Tobongsan, GG, 19, VIII, 1976).
21. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Pukhansan, GG, 11, VII, 1976).
22. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Tŏgamsan, GG, 6, IX, 1976).
23. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Yongmunsan, GG, 7, VI, 1977).
24. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Ch'iaksan, GW, 14, VI, 1976).

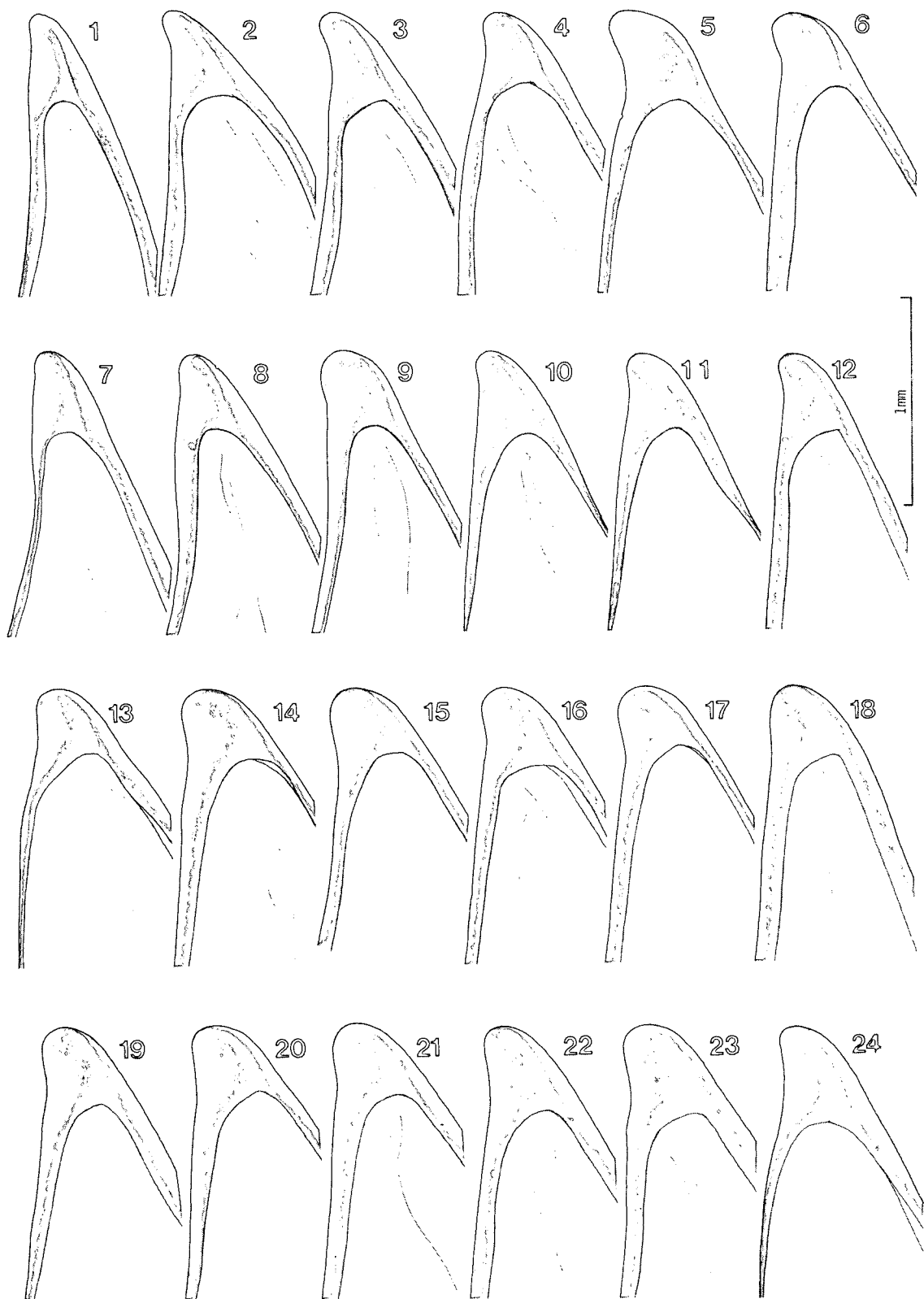
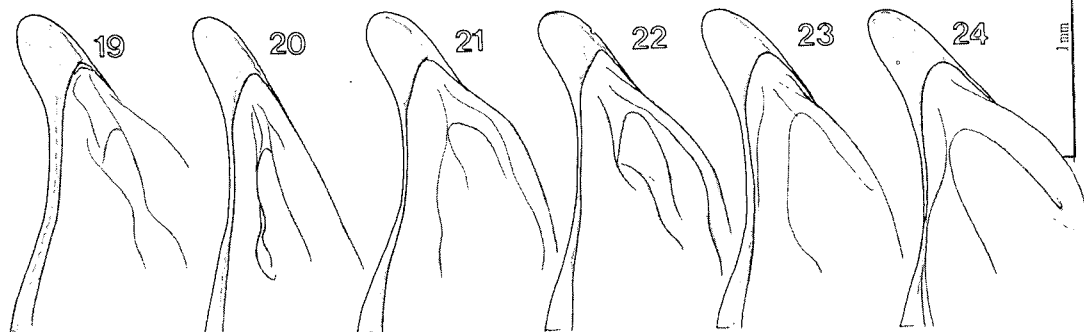
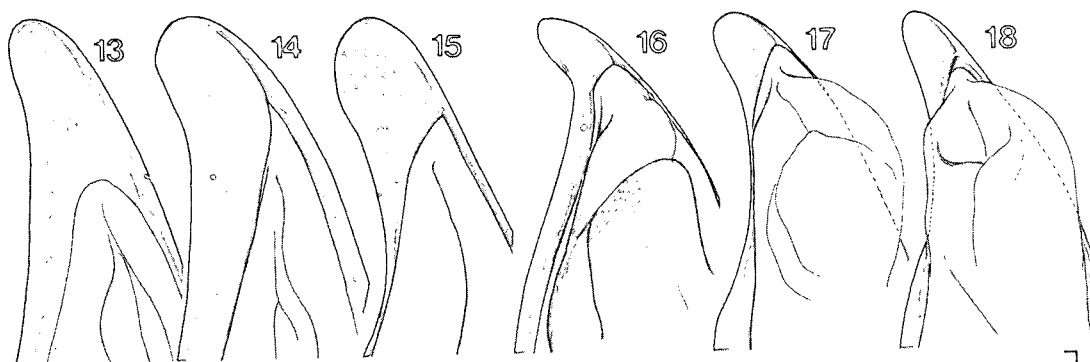
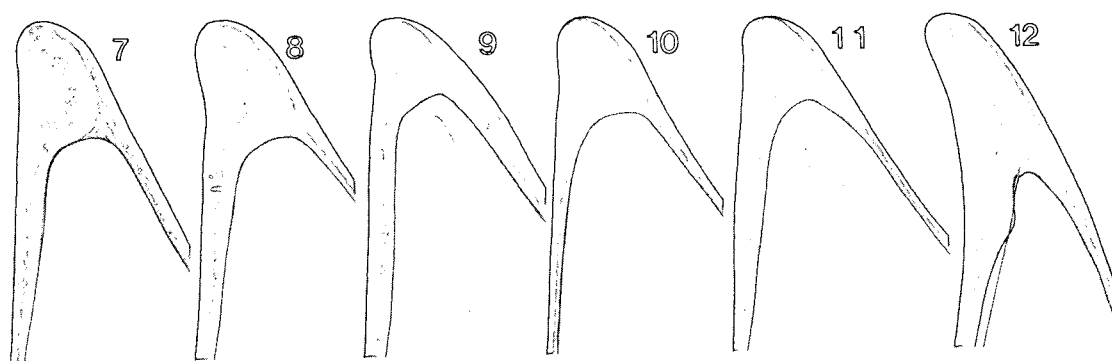
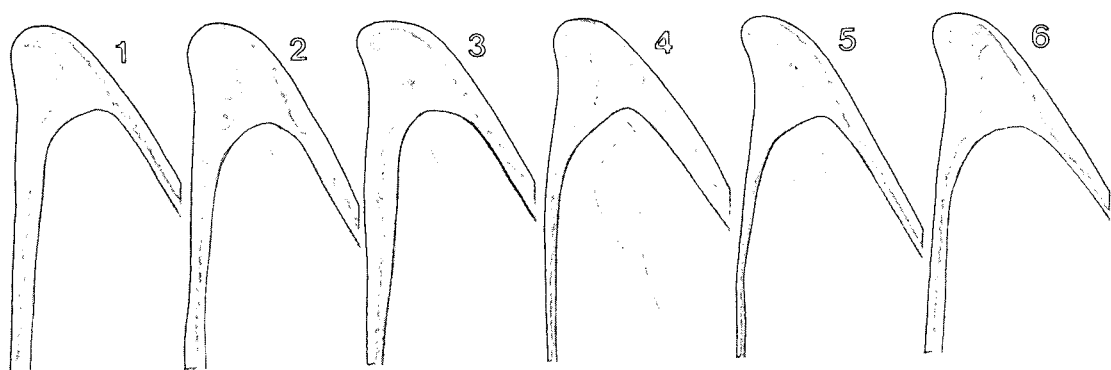


Plate LX.

Apical parts of aedeagi of carabids in dorsal view (4).

- 1,2. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Kwangdöksan, CN, 11, VII, 1982).
- 3,4. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Kyeryongsan, CN, 14, IX, 1975).
- 5,6. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Songnisan, CB, 10, VI, 1977).
7. *Carabus (Parhomopterus) sternbergi honamensis* subsp. nov. (Mt. Chogyesan, JN, 10, VIII, 1976).
8. *Carabus (Parhomopterus) sternbergi honamensis* subsp. nov. (Mt. Chogyesan, JN, 5, VI, 1983).
9. *Carabus (Parhomopterus) sternbergi honamensis* subsp. nov. (Mt. Ch'ujado, JJ, 31, VII, 1972).
- 10,11. *Carabus (Parhomopterus) sternbergi touzalini* (Mt. Hallasan, JJ, 22, V, 1968).
12. *Carabus (Parhomopterus) sternbergi kojedoensis* subsp. nov. (Is. Kōjedo, GN, 19, VI, 1970).
13. *Carabus (Parhomopterus) namhaedoensis* sp. nov. (Mt. Kūmsan in Is. Namhaedo, GN, 13, VI, 1977).
14. *Lipaster (Morphocarabus) monilis consitus* (Muhlhouse, France, 20, IV, 1976).
15. *Lipaster (Morphocarabus) hummeli tristiculus* (Khingan, Manchuria, 20, VII, 1933).
16. *Lipaster (Leptinocarabus) wulffiusi wulffiusi* (Mt. Kwanmobong, HB, 28, VII, 1934).
- 17,18. *Lipaster (Leptinocarabus) wulffiusi opacipennis* (Mt. Sōlaksan, GW, 12, VIII, 1969).
19. *Lipaster (Leptinocarabus) wulffiusi opacipennis* (Mt. Kach'ilbong, GW, 23, VII, 1981).
- 20,21. *Lipaster (Leptinocarabus) wulffiusi opacipennis* (Mt. Odaesan, GW, 7, VIII, 1971).
- 22,23. *Lipaster (Leptinocarabus) wulffiusi opacipennis* (Mt. Pangdaesan, GW, 26, VII, 1974).
24. *Lipaster (Leptinocarabus) wulffiusi opacipennis* (Mt. Myōngjisan, GG, 27, V, 1978).

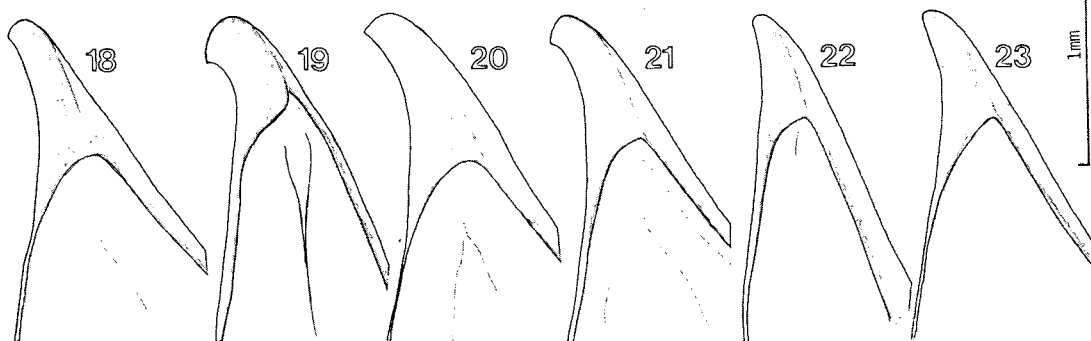
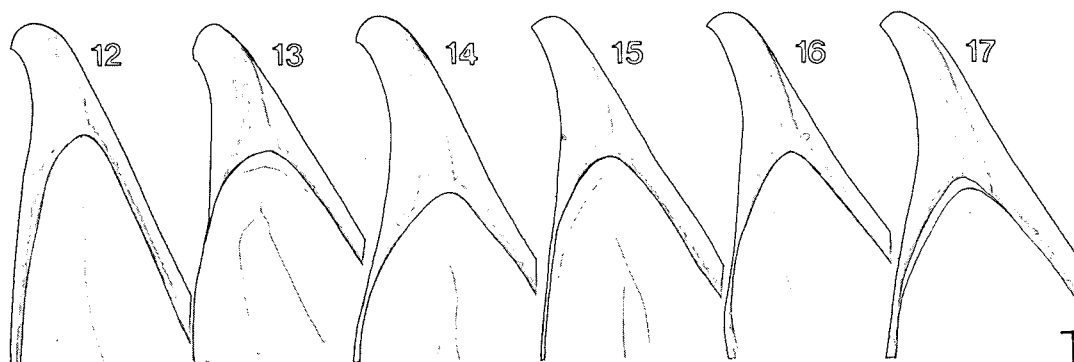
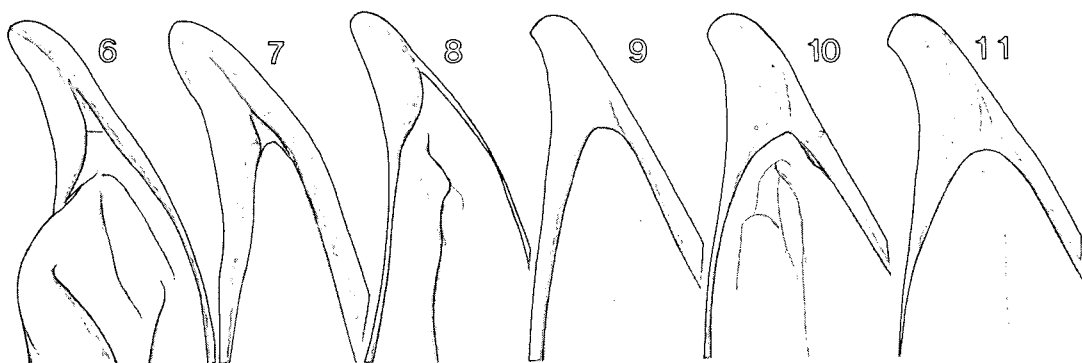
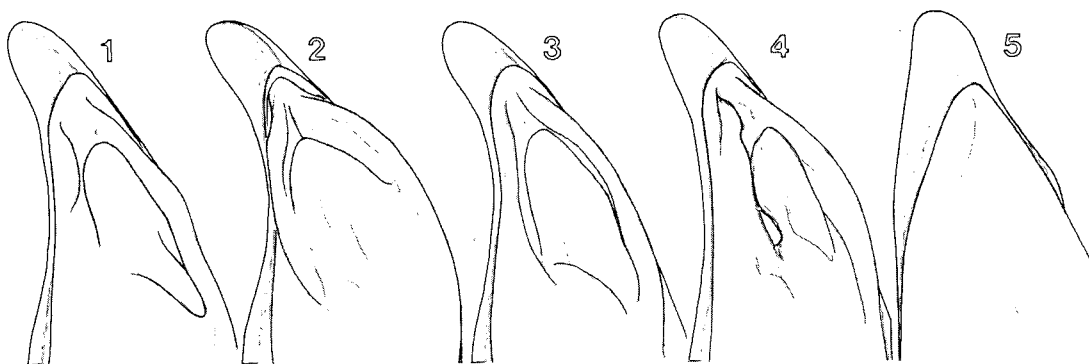


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# Plate LXI.

## Apical parts of aedeagi of carabids in dorsal view (5).

1. *Lipaster (Leptinocarabus) wulffiussi opacipennis* (Mt. Myŏngjisan, GG, 27, V, 1978).
- 2,3. *Lipaster (Leptinocarabus) wulffiussi opacipennis* (Mt. Tŏgamsan, GG, 6, IX, 1976).
4. *Lipaster (Leptinocarabus) wulffiussi alpinus* subsp. nov. (Mt. T'aebaeksan, GW, 27, VI, 1976).
5. *Leptocarabus* (s. str.) *procerulus procerulus* (Senjyogahara, Nikko, Tochigi Pref., Honshu, Japan, 5, XI, 1969).
6. *Leptocarabus (Aulonocarabus) kurilensis sugai* (Mt. Rebundake, Is. Rebunto, Hokkaido, Japan, 2, VIII, 1968).
7. *Leptocarabus (Aulonocarabus) kurilensis daisetsuzanus* (Mt. Daisetsuzan, Hokkaido, Japan, 2, VIII, 1968).
8. *Leptocarabus (Aulonocarabus) kwanmobongensis* sp. nov. (Mt. Kwanmobong, HB, ?, VII, 1934).
9. *Leptocarabus (Weolseocarabus) koreanus weolseoe* subgen. et subsp. nov. (Mt. Sŏlaksan, GW, 13, VIII, 1969).
10. *Leptocarabus (Weolseocarabus) koreanus weolseoe* subgen. et subsp. nov. (Mt. Sŏlaksan, GW, 14, VIII, 1969).
- 11,12. *Leptocarabus (Weolseocarabus) koreanus koreanus* subgen. nov. (Mt. Kach'ilbong, GW, 24, VII, 1981).
13. *Leptocarabus (Weolseocarabus) koreanus koreanus* subgen. nov. (Konjiam, GG, 1, VIII, 1976).
14. *Leptocarabus (Weolseocarabus) koreanus koreanus* subgen. nov. (Konjiam, GG, 6, IX, 1976).
15. *Leptocarabus (Weolseocarabus) koreanus koreanus* subgen. nov. (Mt. P'alongsan, GB, 3, IX, 1982).
- 16,17. *Leptocarabus (Weolseocarabus) koreanus koreanus* subgen. nov. (Mt. T'ohamsan, GB, 22, IX, 1982).
18. *Leptocarabus (Weolseocarabus) koreanus koreanus* subgen. nov. (Mt. Kayasan, GN, 12, IX, 1982).
19. *Leptocarabus (Weolseocarabus) koreanus koreanus* subgen. nov. (Mt. Tŏgyusan, JB, 27, VII, 1983).
20. *Leptocarabus (Weolseocarabus) koreanus koreanus* subgen. nov. (Mt. Kŭmjŏngsan, GN, 21, IX, 1982).
21. *Leptocarabus (Weolseocarabus) koreanus koreanus* subgen. nov. (Is. Kŏjedo, GN, 15, VI, 1977).
- 22,23. *Leptocarabus (Weolseocarabus) koreanus minor* subgen. et subsp. nov. (Mt. Sobaeksan, GB, 23, VII, 1977).

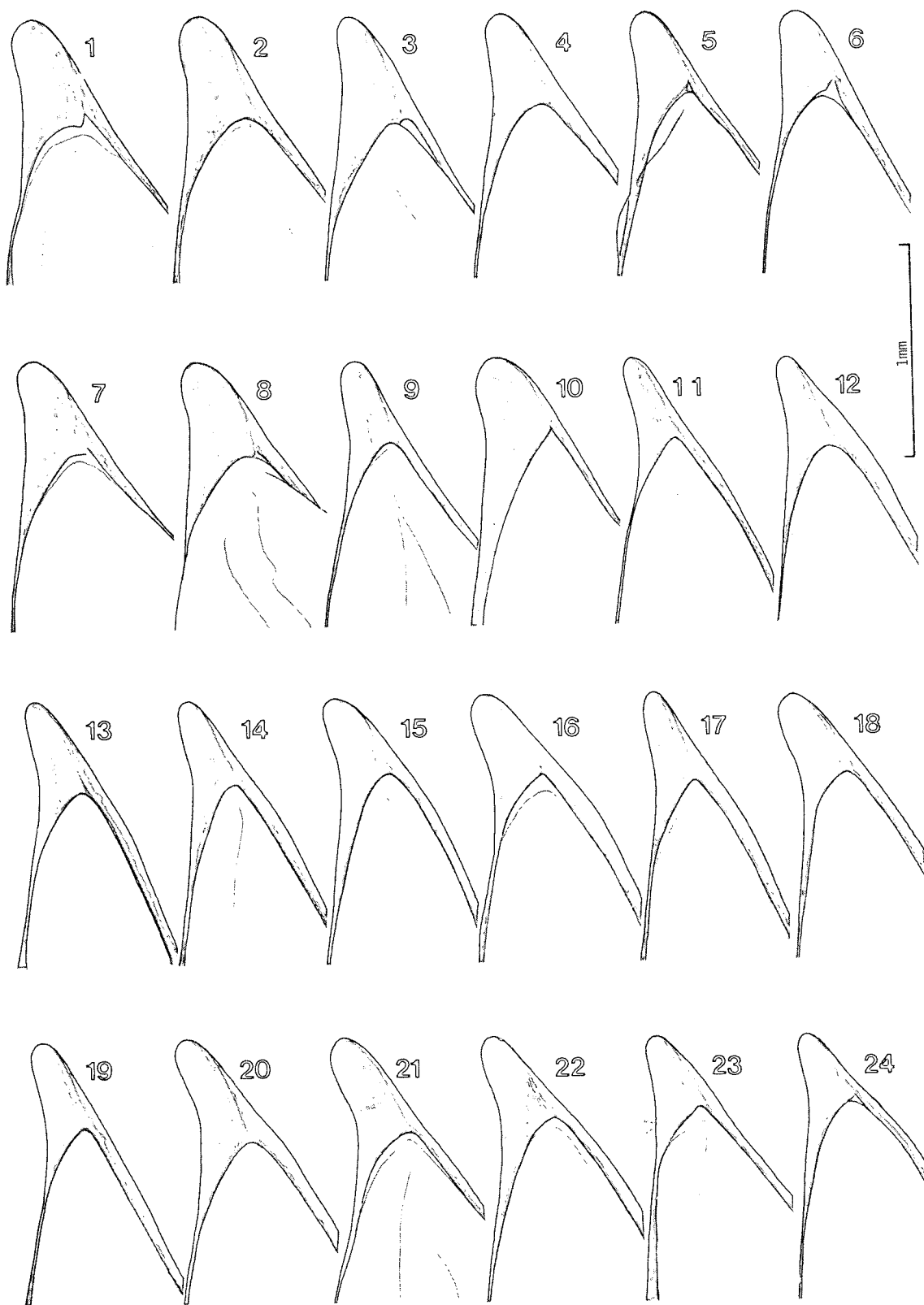


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Plate LXII.

Apical parts of aedeagi of carabids in dorsal view (6).

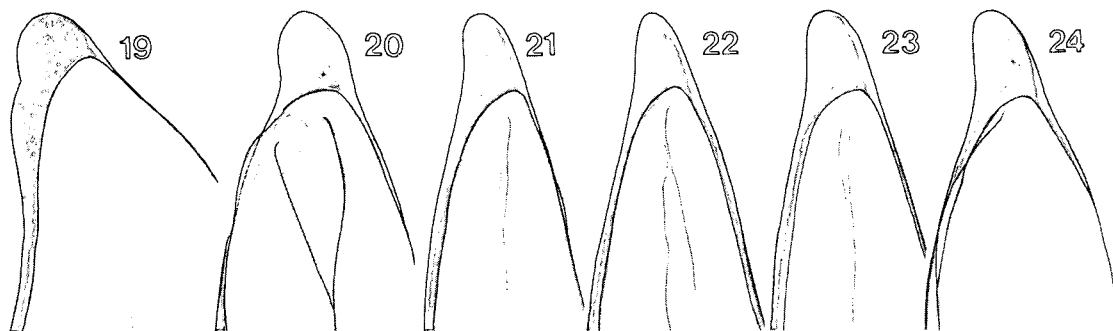
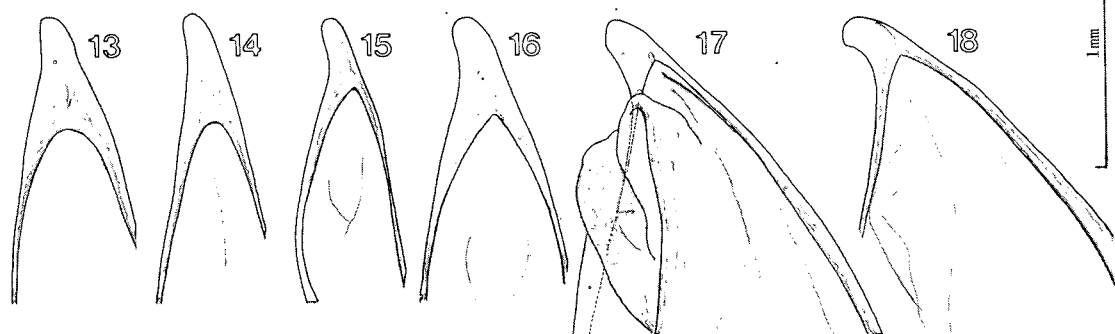
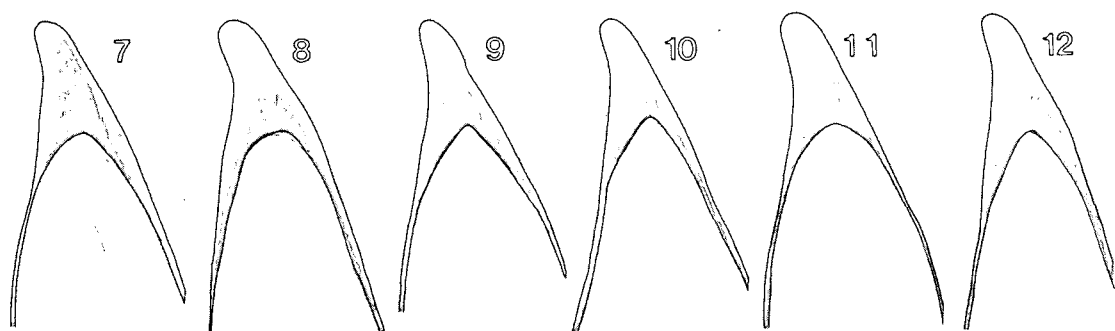
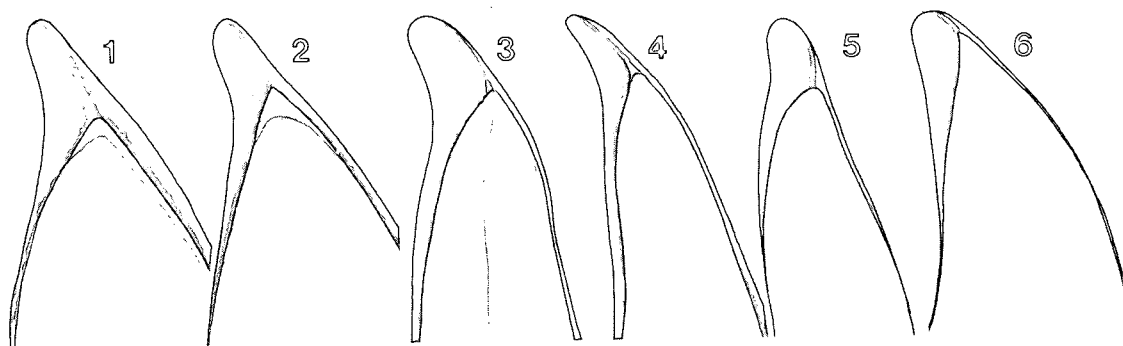
1. *Leptocarabus (Adelocarabus) semiopacus* (Mt. Sölkasan, GW, 12, VIII, 1969).
2. *Leptocarabus (Adelocarabus) semiopacus* (Mt. Sölkasan, GW, 9, VIII, 1976).
3. *Leptocarabus (Adelocarabus) semiopacus* (Mt. Sobaeksan, GB, 23, VII, 1977).
4. *Leptocarabus (Adelocarabus) semiopacus* (Mt. Kyeryongsan, CN, 14, IX, 1975).
5. *Leptocarabus (Adelocarabus) semiopacus* (Mt. Hwanghaksan, GB, 29, IX, 1982).
- 6,7. *Leptocarabus (Adelocarabus) semiopacus* (Mt. P'algongsan, GB, 10, IX, 1982).
8. *Leptocarabus (Adelocarabus) semiopacus* (Mt. Tögyusan, JB, 22, VIII, 1977).
9. *Leptocarabus (Adelocarabus) semiopacus* (Mt. Chirisan, GN, 13, VII, 1981).
10. *Leptocarabus (Adelocarabus) semiopacus* (Mt. Chirisan, GN, 12, VI, 1983).
11. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Sölkasan, GW, 30, VII, 1982).
12. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Sölkasan, GW, 12, VIII, 1969).
13. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Sogŭmgang, GW, 7, IX, 1980).
14. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Odaesan, GW, 18, IX, 1982).
15. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Pangdaesan, GW, 28, VII, 1974).
- 16,17. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Myöngjisan, GG, 7, VI, 1976).
18. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Pukhansan, GG, 12, VII, 1976).
19. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Seoul, GG, 23, VIII, 1972).
- 20,21. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Tögamsan, GG, 6, IX, 1976).
22. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. T'aebaeksan, GW, 27, VI, 1976).
23. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. P'algongsan, GB, 3, IX, 1982).
24. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. P'algongsan, GB, 10, IX, 1982).



# Plate LXIII.

## Apical parts of aedeagi of carabids in dorsal view (7).

1. *Leptocarabus (Adelocarabus) seishinensis seunglaki* subsp. nov. (Mt. Chirisan, GN, 13, VII, 1981).
2. *Leptocarabus (Adelocarabus) seishinensis seunglaki* subsp. nov. (Mt. Chirisan, GN, 6, VI, 1983).
3. *Leptocarabus (Adelocarabus) arboreus arboreus* (Aizankei, Mt. Daisetsuzan, Hokkaido, Japan, 12-15, VII, 1970).
4. *Leptocarabus (Adelocarabus) exilis babai* (Mt. Tenguharayama, Nagano Pref., Honshu, Japan, 15, IX, 1969).
5. *Leptocarabus (Asteno-carabus) opaculus kurosawai* (Aizankei, Mt. Daisetsuzan, Hokkaido, Japan, 12-15, VII, 1970).
6. *Leptocarabus (Pentacarabus) harmandi okutamaensis* (Mt. Mitsutogeyama, Yamanashi Pref., Honshu, Japan, 2, VI, 1971).
7. *Hemicarabus* (s. str.) *tuberculosis* (Mt. Samnipsan, HB, ?, VI, 1930).
8. *Hemicarabus* (s. str.) *tuberculosis* (Pujölyöng, HN, 27, VII, 1933).
9. *Hemicarabus* (s. str.) *tuberculosis* (Mt. Odaesan, GW, 5, VIII, 1971).
10. *Hemicarabus* (s. str.) *tuberculosis* (Kwangnŭng, GG, 27, IV, 1969).
11. *Hemicarabus* (s. str.) *tuberculosis* (Mt. Hallasan, JJ, 30, VII, 1972).
12. *Hemicarabus* (s. str.) *tuberculosis* (Mt. Hallasan, JJ, 18, VII, 1978).
13. *Hemicarabus* (s. str.) *tuberculosis* (Oiwake Pass, Hidaka, Hokkaido, Japan, 22, VIII, 1971).
14. *Hemicarabus* (s. str.) *macleayi coreensis* (Unsurŭöng, HN, 28, VII, 1936).
- 15,16. *Hemicarabus (Homoeocarabus) maeander quelpartensis* subsp. nov. (Mt. Hallasan, JJ, 20, VI, 1968).
- 17,18. *Scambocarabus kruberi hallasanensis* subsp. nov. (Mt. Hallasan, JJ, 8, VI, 1972).
19. *Cathaicus brandti* (Shienhien, China, 15, VI, 1936).
20. *Tomocarabus fraterculus fraterculus* (Unsurŭöng, HN, 16, VII, 1935).
21. *Tomocarabus fraterculus affinis* subsp. nov. (Mt. Sölsaksan, GW, 29, VII, 1971).
22. *Tomocarabus fraterculus affinis* subsp. nov. (Mt. Odaesan, GW, 18, IX, 1982).
- 23,24. *Tomocarabus fraterculus affinis* subsp. nov. (Mt. Myöngjisan, GG, 27, V, 1978).



# Plate LXIV.

## Apical parts of aedeagi of carabids in dorsal view (8).

- 1,2. *Tomocarabus fraterculus assimilis* subsp. nov. (Mt. T'aebaeksan, GW, 27, VI, 1976).
3. *Tomocarabus fraterculus assimilis* subsp. nov. (Mt. Sobaeksan, GB, 6, VI, 1981).
- 4,5. *Tomocarabus fraterculus assimilis* subsp. nov. (Mt. P'algongsan, GB, 24, V, 1983).
6. *Tomocarabus fraterculus yeongsiki* subsp. nov. (Mt. Chirisan, GN, 13, VII, 1981).
7. *Tomocarabus fraterculus yeongsiki* subsp. nov. (Mt. Chirisan, GN, 6, VI, 1983).
8. *Megodontus (Ainocarabus) kolbei kolbei* (Mt. Apoidake, Hidaka, Hokkaido, Japan, 26, VIII, 1971).
9. *Megodontus (Ainocarabus) kolbei aino* (Aizankei, Mt. Daisetsuzan, Hokkaido, Japan, 12-15, VII, 1970).
10. *Megodontus (Ainocarabus) kolbei kosugei* (Mt. Shakotandake, Shiribeshi, Hokkaido, Japan, 18-24, VIII, 1972).
11. *Megodontus (Ainocarabus) kolbei munakataorum* (Mt. Daisengen, Oshima, Hokkaido, Japan, 1, IX, 1971).
12. *Autocarabus auratus lotharingus* (Montpellier, France, 30, III, 1975).
13. *Damaster (Koreacoptolabrus) constricticollis constricticollis* subgen. nov. (Mt. Odaesan, GW, 9, VIII, 1976).
14. *Damaster (Koreacoptolabrus) constricticollis constricticollis* subgen. nov. (Mt. T'aebaeksan, GW, 28, VI, 1976).
15. *Damaster (Koreacoptolabrus) constricticollis chiricola* subgen. et subsp. nov. (Mt. Chirisan, GN, 6, VI, 1983).
16. *Damaster (Koreacoptolabrus) mirabilissimus* subgen. nov. (Mt. T'aebaeksan, GW, 27, VI, 1976).
17. *Damaster (Koreacoptolabrus) mirabilissimus* subgen. nov. (Mt. Sobaeksan, GB, 24, VII, 1977).
18. *Damaster (Koreacoptolabrus) mirabilissimus* subgen. nov. (Mt. Sobaeksan, GB, 6, VI, 1981).
19. *Damaster (Acoptolabrus) gehini gehini* (Jyozankei, Sapporo, Hokkaido, Japan, 24, VI, 1979).
20. *Damaster (Acoptolabrus) gehini radiatocostatus* (Oiwake Pass, Hidaka, Hokkaido, Japan, 27-30, VIII, 1972).
21. *Damaster (Acoptolabrus) gehini sapporensis* (Mt. Apoidake, Hidaka, Hokkaido, Japan, 5-8, VIII, 1970).
22. *Damaster (Acoptolabrus) gehini munakatai* (Mt. Daisengendake, Hokkaido, Japan, 19-23, VIII, 1973).
23. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Sölaksan, GW, 5, VIII, 1969).
24. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Sölaksan, GW, 21, VIII, 1969).

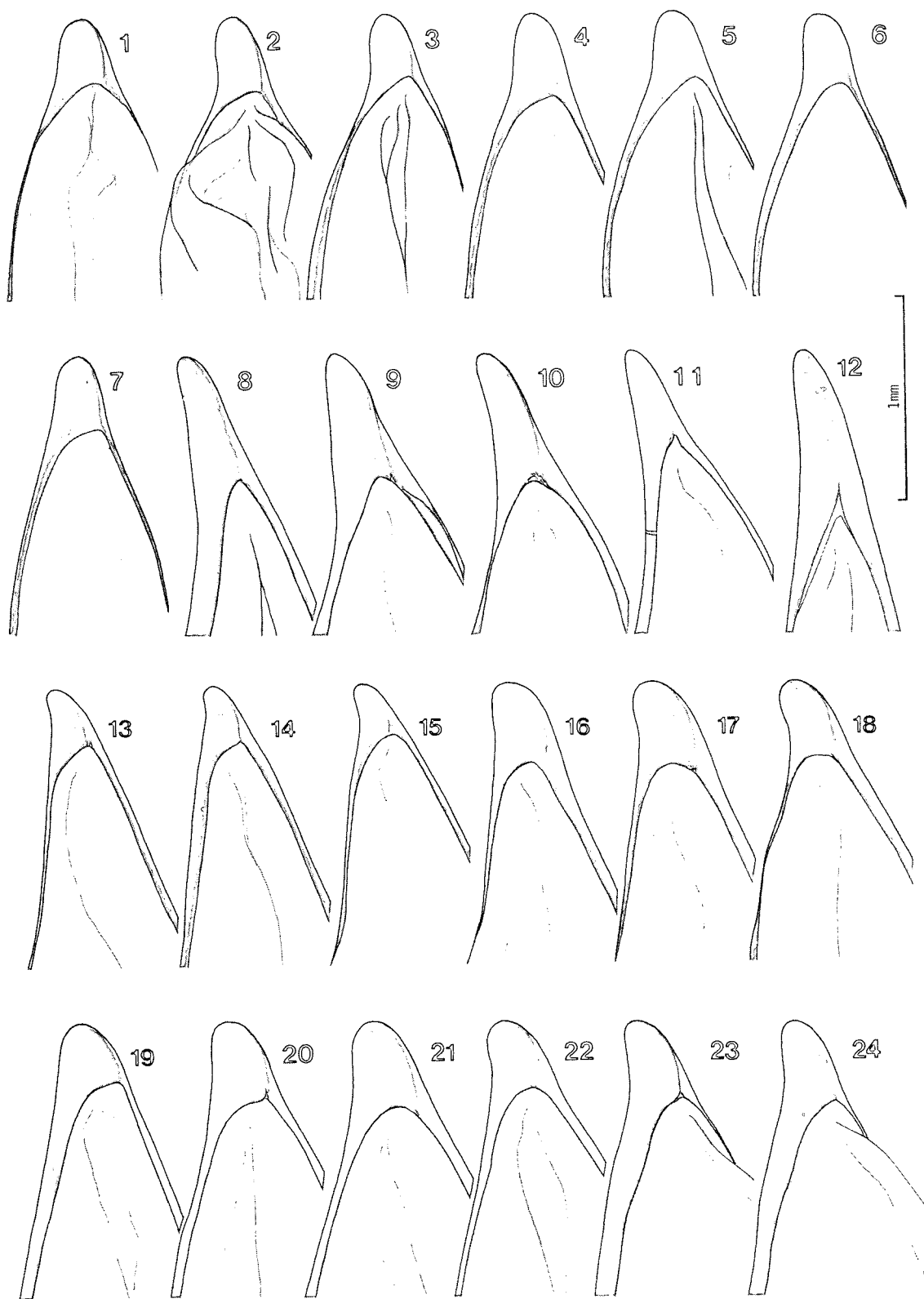
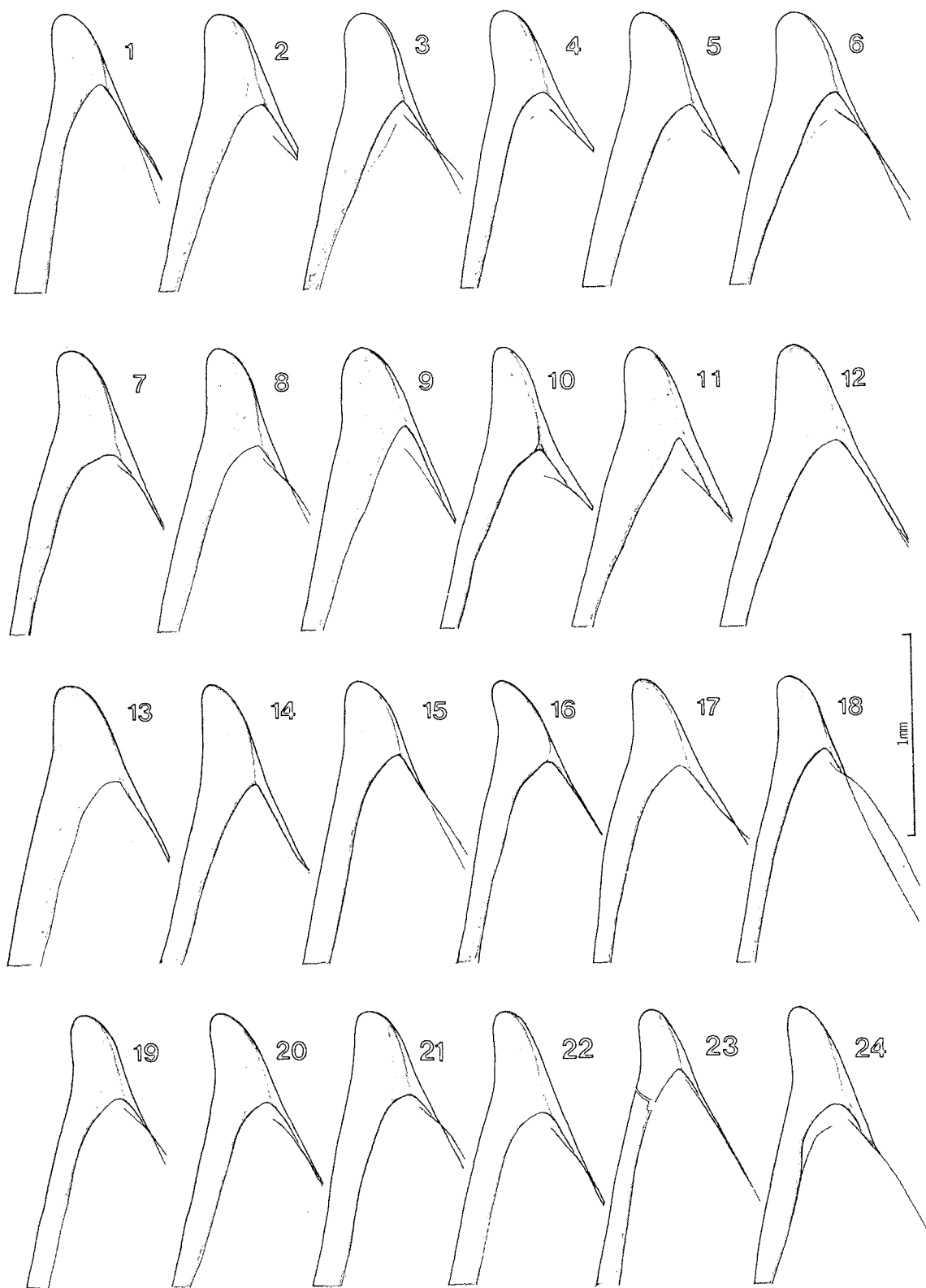


Plate LXV.

Apical parts of aedeagi of carabids in dorsal view (9).

1. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Pangdaesan, GW, 27, VII, 1974).
- 2,3. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Wangbangsan, GG, 6, VIII, 1976).
4. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Myŏngjisan, GG, 27, V, 1978).
5. *Damaster (Coptolabrus) jankowskii jankowskii* (Kwangnŭng, GG, 15, VIII, 1971).
- 6,7. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Aengmubong, GG, 15, VI, 1976).
8. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Pukhansan, GG, 11, VII, 1976).
9. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Tobongsan, GG, 19, VIII, 1976).
- 10,11. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Tŏgamsan, GG, 6, IX, 1976).
12. *Damaster (Coptolabrus) jankowskii jankowskii* (Konjiam, GG, 1, VIII, 1976).
13. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Yongmunsan, GG, 14, IX, 1980).
14. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Ch'iaksan, GW, 14, VI, 1976).
- 15,16. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Sobaeksan, GB, 23, VII, 1977).
- 17,18. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Kyeryongsan, CN, 14, IX, 1975).
- 19,20. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Songnisan, CB, 10, VI, 1977).
- 21,22. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. P'algongsan, GB, 10, IX, 1982).
23. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. T'ohamsan, GB, 22, IX, 1982).
24. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Chogyesan, JN, 5, VI, 1983).



## Plate LXVI

### Apical parts of aedeagi of carabids in dorsal view (10).

1. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Chogyesan, JN, 5, VI, 1983).
2. *Damaster (Coptolabrus) jankowskii kangwonensis* subsp. nov. (Mt. Odaesan, GW, 5, VIII, 1971).
3. *Damaster (Coptolabrus) jankowskii kangwonensis* subsp. nov. (Mt. Odaesan, GW, 9, VIII, 1976).
- 4,5. *Damaster (Coptolabrus) jankowskii kangwonensis* subsp. nov. (Mt. T'aebaeksan, GW, 27, VI, 1976).
- 6,7. *Damaster (Coptolabrus) jankowskii elegans* subsp. nov. (Mt. Chirisan, GN, 12, VI, 1983).
8. *Damaster (Coptolabrus) jankowskii fusanus* (Pusan, GN, 3, VI, 1977).
- 9,10. *Damaster (Coptolabrus) jankowskii kojensis* (Is. Kōjedo, GN, 22-31, VII, 1969).
- 11,12. *Damaster (Coptolabrus) jankowskii kojensis* (Mt. Kūmsan in Is. Namhaedo, GN, 13, VI, 1977).
13. *Damaster (Coptolabrus) jankowskii quelpartianus* (Mt. Hallasan, JJ, 22, VI, 1976).
14. *Damaster (Coptolabrus) jankowskii quelpartianus* (Mt. Hallasan, JJ, 18, VII, 1978).
15. *Damaster (Coptolabrus) jankowskii quelpartianus* (Chungmun, JJ, 20, VII, 1978).
- 16,17. *Damaster (Coptolabrus) fruhstorferi* (Mt. Mitake, Is. Tsushima, Nagasaki Pref., Japan, 27, IV, 1972).
18. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Kūmgangsan, GW, ?, VIII, 1935).
19. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Sōlaksan, GW, 12, VIII, 1969).
20. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Sōlaksan, GW, 9, VIII, 1969).
- 21,22. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Odaesan, GW, 9, VIII, 1976).
23. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Sogūmgang, GW, 28, VII, 1971).
24. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Pangdaesan, GW, 30, VII, 1974).

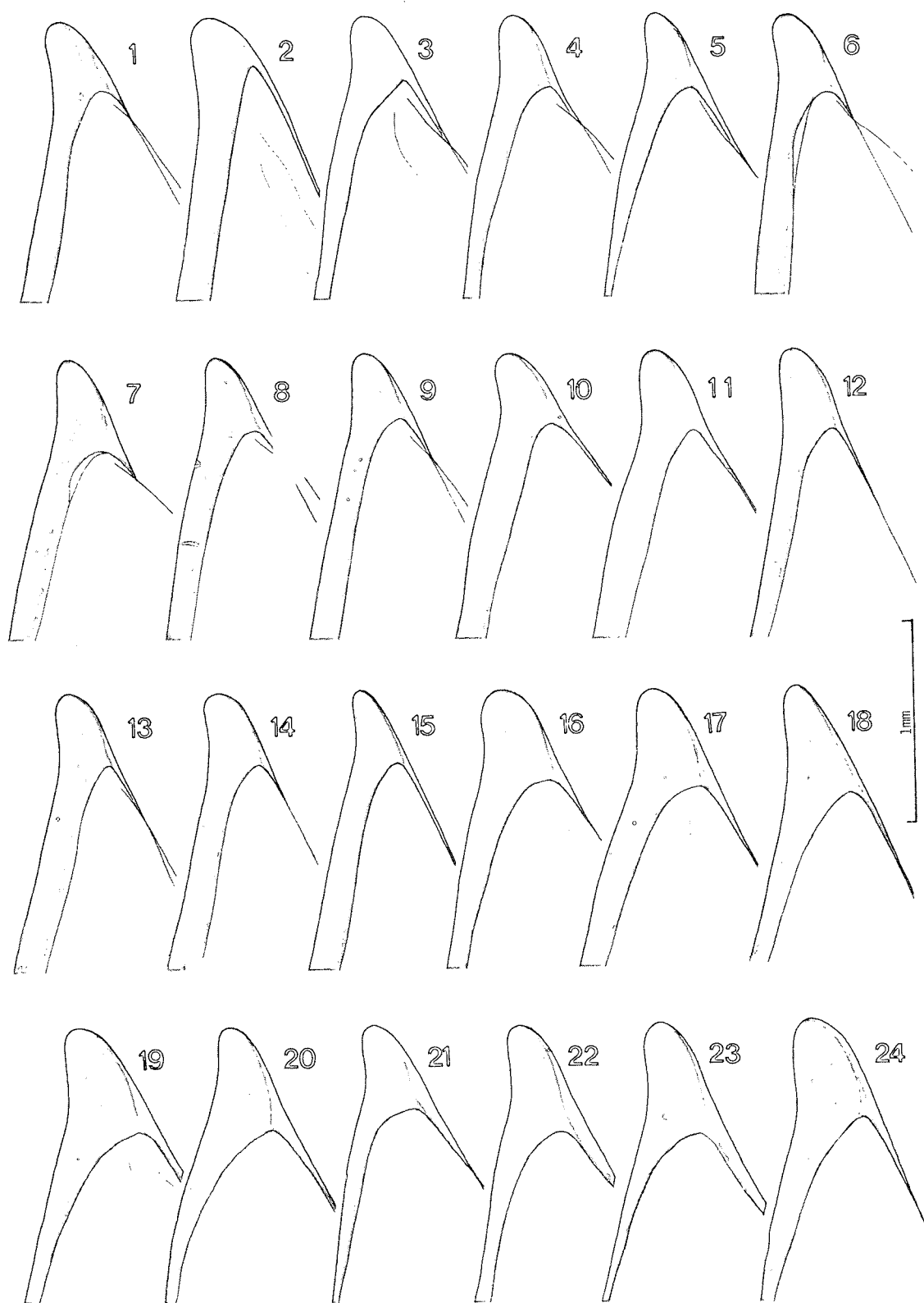


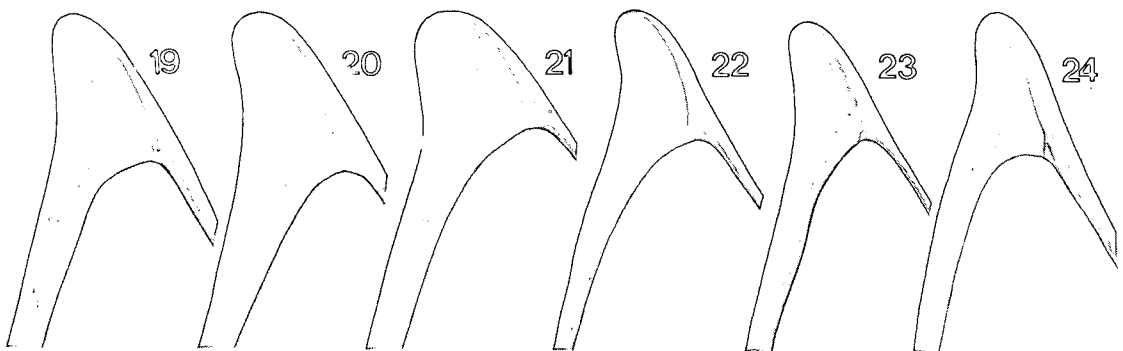
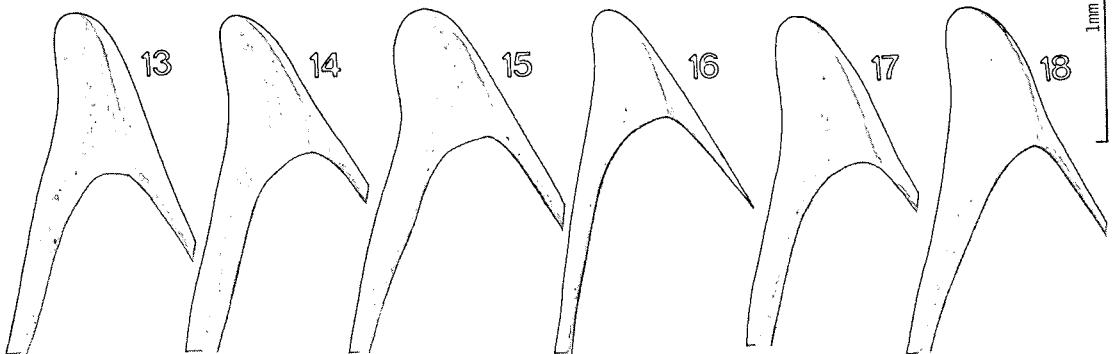
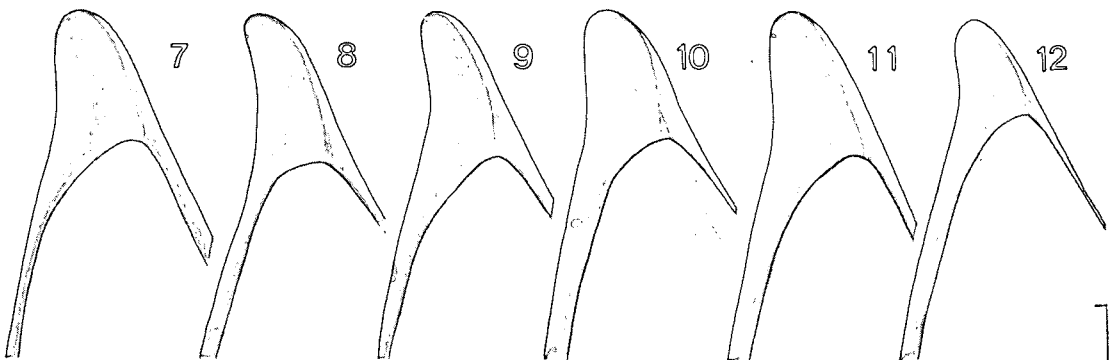
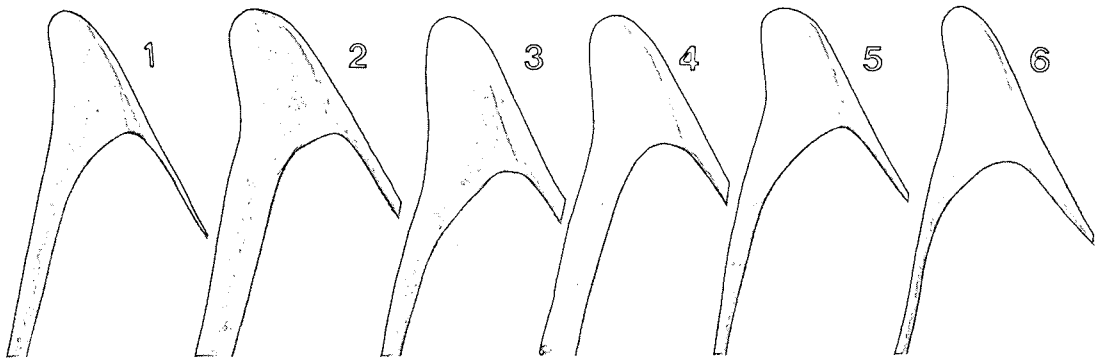
Plate LXVIII.

Apical parts of aedeagi of carabids in dorsal view (12)

- 1,2. *Damaster (Coptolabrus) smaragdinus branickii* (Sanin Myŏn, GN, 28, V, 1983).
3. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Muhaksan, GN, 24, IX, 1982).
- 4,5. *Damaster (Coptolabrus) smaragdinus branickii* (Is Kŏjedo, GN, 16-20, VII, 1970).
6. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Naejangsan, JB, 6, VI, 1968).
7. *Damaster (Coptolabrus) smaragdinus branickii* (Koch'ang, JB, 31, V, 1973).
8. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Yudalsan, JN, 19, VI, 1976).
9. *Damaster (Coptolabrus) smaragdinus hongdoensis* subsp. nov. (Is. Hongdo, JN, 10, VIII, 1981).
10. *Damaster (Coptolabrus) smaragdinus sangjaei* subsp. nov. (Mt. Chirisan, GN, 6, VI, 1983).
11. *Damaster (Coptolabrus) smaragdinus hoenggandoensis* subsp. nov. (Is. Hoenggando, JJ, 4, VIII, 1970).
- 12,13. *Damaster (Coptolabrus) smaragdinus monilifer* (Mt. Hallasan, JJ, 29, VII, 1978).
- 14,15. *Damaster* (s. str.) *blaptoides rugipennis* (Asahigawa, Hokkaido, Japan, 8, VII, 1977).
16. *Damaster* (s. str.) *blaptoides capito* (Mt. Kinpokusan, Is. Sado, Niigata Pref., Honshu, Japan, 2-5, III, 1971).
17. *Damaster* (s. str.) *blaptoides fortunei* (Is. Awashima, Niigata Pref., Honshu, Japan, 31, III, 1970).
18. *Damaster* (s. str.) *blaptoides oxuroides* (Kizoro, Saitama Pref., Honshu, Japan, ?, III, 1968).
19. *Damaster* (s. str.) *blaptoides montanus* (Mt. Adatarasan, Fukushima Pref., Honshu, Japan, 8, IV, 1970).
20. *Cychrus morawitzi* (Mt. Apoidake, Hidaka, Hokkaido, Japan, 26, VIII, 1971).

Apical parts of aedeagus seen from left side.

21. *Leptocarabus (Aulonocarabus) kwanmobongensis* sp. nov. (Mt. Kwanmobong, HB, ?, VII, 1934).



# Plate LXIX.

## Right parameres of carabids in lateral shape (1).

1. *Calosoma maximowiczi* (Mt. Ch'önmasan, GG, 28, V, 1972).
2. *Calosoma maximowiczi* (Mt. Hallasan, JJ, 30, VII, 1972).
3. *Calosoma inquisitor cyanescens* (Nanam, HB, 10, VI, 1929).
4. *Charmosta lugens* (Ch'öngjin, HB, ?, VIII, 1929).
5. *Campalita chinense* (Seoul, GG, 14, VIII, 1971).
6. *Campalita chinense* (Kamishihoro, Tokachi, Hokkaido, Japan, 23, VII, 1970).
7. *Apotomopterus (Limnocarabus) clathratus aquatilis* comb. nov. (Chikauchi, Miyako City, Honshu, Japan, 30, VII, 1973).
8. *Apotomopterus (Euleptocarabus) porrecticollis porrecticollis* (Mt. Sotoyama, Nikko, Tochigi Pref., Honshu, Japan, 3, XI 1969).
9. *Apotomopterus* (s. str.) *sauteri* (Tengchih, Kaoshunsien, Taiwan, ?, VIII, 1975).
10. *Carabus* (s. str.) *granulatus granulatus* (Kissingen, Unterfranken, Germany, 1, III, 1976).
11. *Carabus* (s. str.) *granulatus ussuriensis* (Mt. Kwanmobong, HB, 18, VII, 1932).
12. *Carabus* (s. str.) *granulatus telluris* (Fukushimagata, Tsukioka Pref., Honshu, Japan, 31, III, 1969).
13. *Carabus* (s. str.) *granulatus yezoensis* (Kawayu, Kushiro, Hokkaido, Japan, 10, VII, 1969).
14. *Carabus (Eutelocarabus) arvensis germaniae* (Hoffenheim, Gr. Wald, Germany, ?, VI, 1974).
15. *Carabus (Eutelocarabus) conciliator faldermanni* (Seoul, GG, ?, VII, 1961).
16. *Carabus (Isiocarabus) fiduciarus kirinicus* (Mt. Un'gilsan, GG, 22, V, 1983).
17. *Carabus (Isiocarabus) fiduciarus saishutoicus* (Mt. Hallasan, JJ, 28, VII, 1978).
18. *Carabus (Ohomopterus) dehaanii dehaanii* (Mt. Hieizan, Kyoto Pref., Honshu, Japan, 15, I, 1967).
19. *Carabus (Ohomopterus) albrechti freyi* (Ogi, Is. Sadogashima, Honshu, Japan, 21, XI, 1971).
20. *Carabus (Ohomopterus) esakii* (Izu Peninsula, Shizuoka Pref. Honshu, Japan, 20, XII, 1973).
21. *Carabus (Ohomopterus) insulicola insulicola* (Kizoro, Saitama Pref., Honshu, Japan, ?, II, 1968).
22. *Carabus (Eucarabus) ullrichi ullrichi* (Slov., Lipt., Osada, Czechoslovakia, ?, VIII, 1968).
23. *Carabus (Parhomopterus) sternbergi cartereti* (Mt. Sölaksan, GW, 27, VII, 1982).
24. *Lipaster (Morphocarabus) monilis consitus* (Muhlhouse, France, 20, IV, 1976).
25. *Lipaster (Morphocarabus) hummeli tricticulus* (Khingan, Manchuria, 20, VII, 1933).
26. *Lipaster (Leptinocarabus) wulffiusi opacipennis* (Mt. Sölaksan, GW, 12, VIII, 1969).
27. *Leptocarabus* (s. str.) *procerulus procerulus* (Senjyogahara, Nikko, Tochigi Pref., Honshu, Japan, 5, XI, 1969).

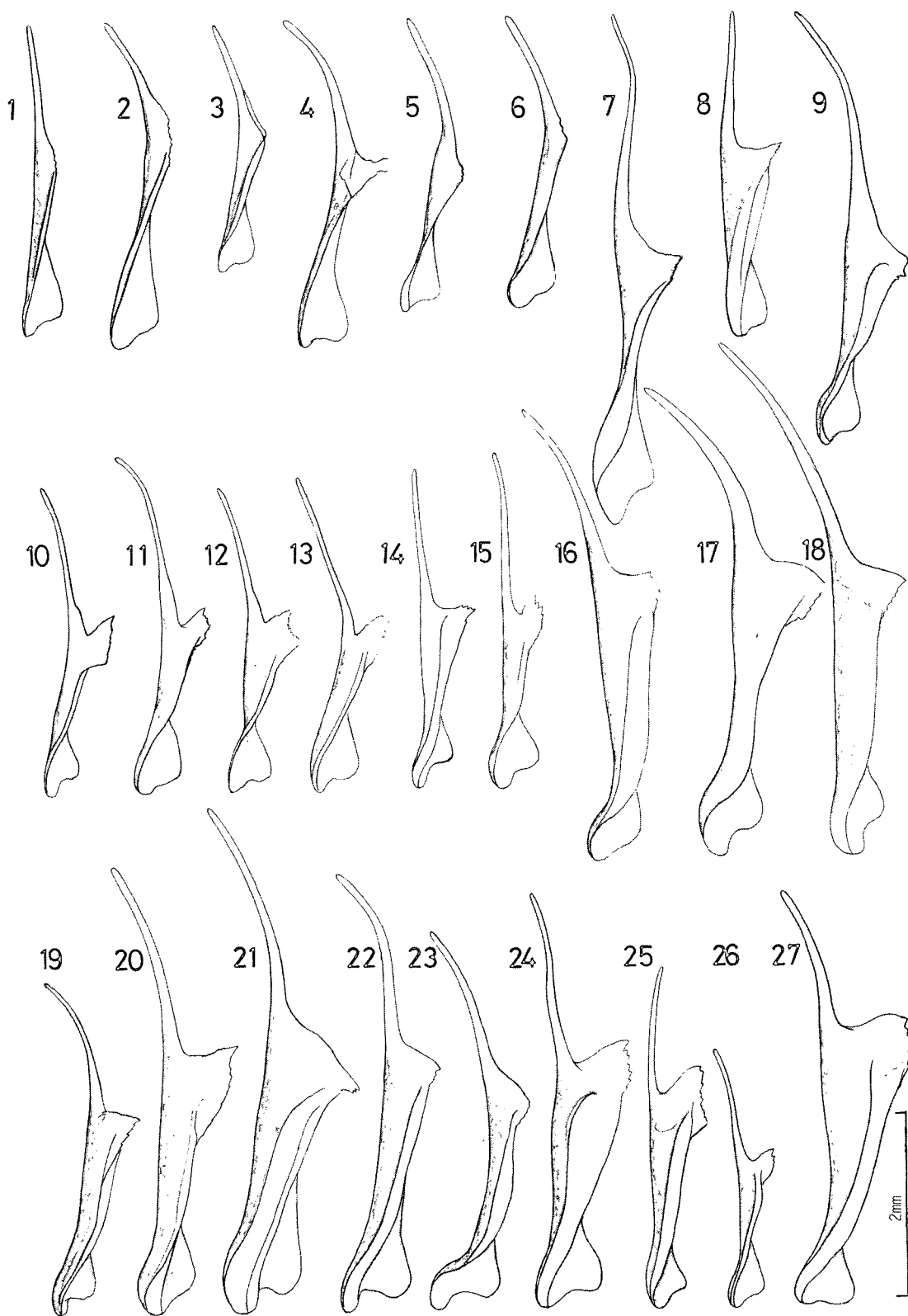
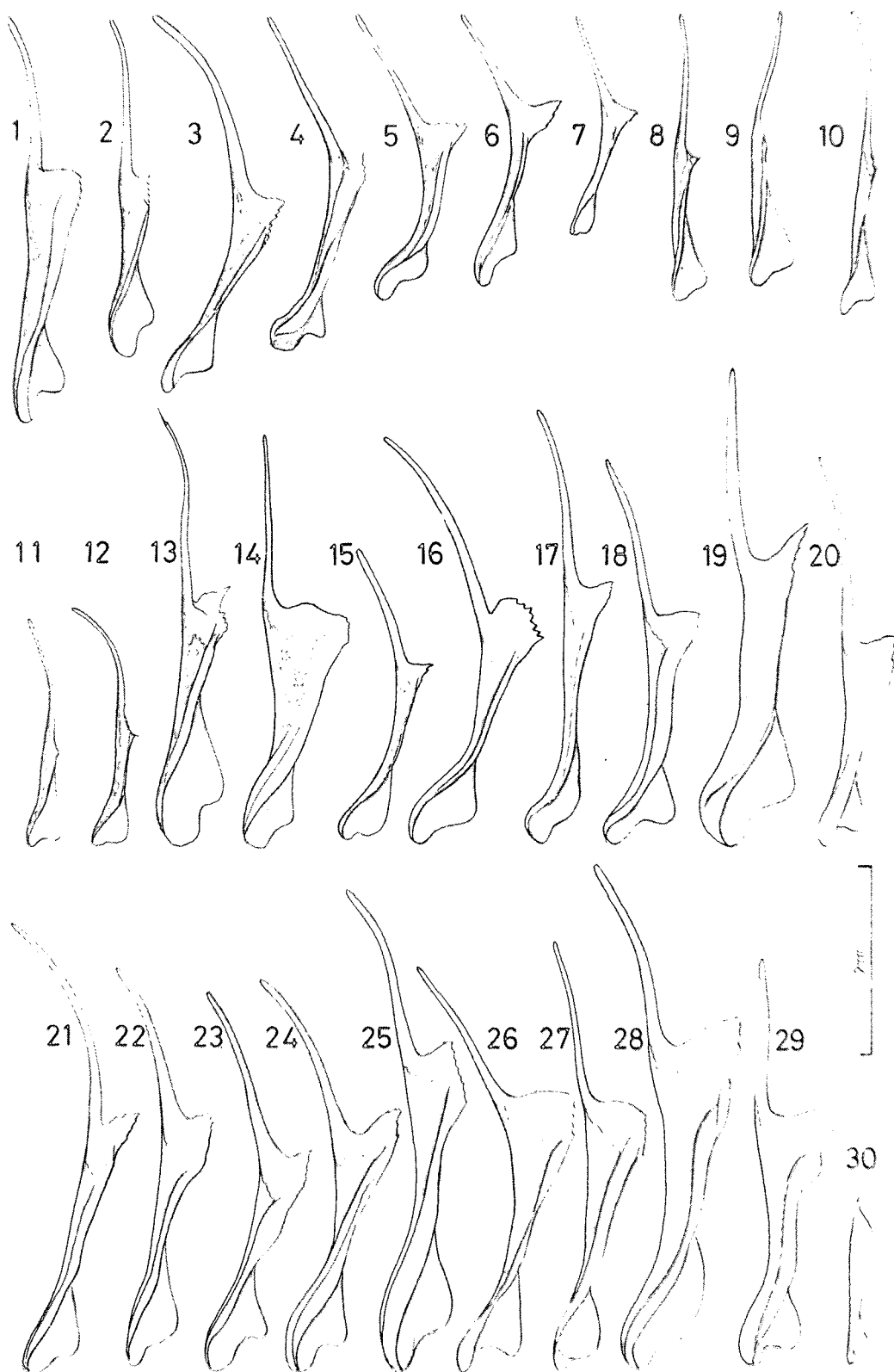


Plate LXX.

Right parameres of carabids in lateral shape (2).

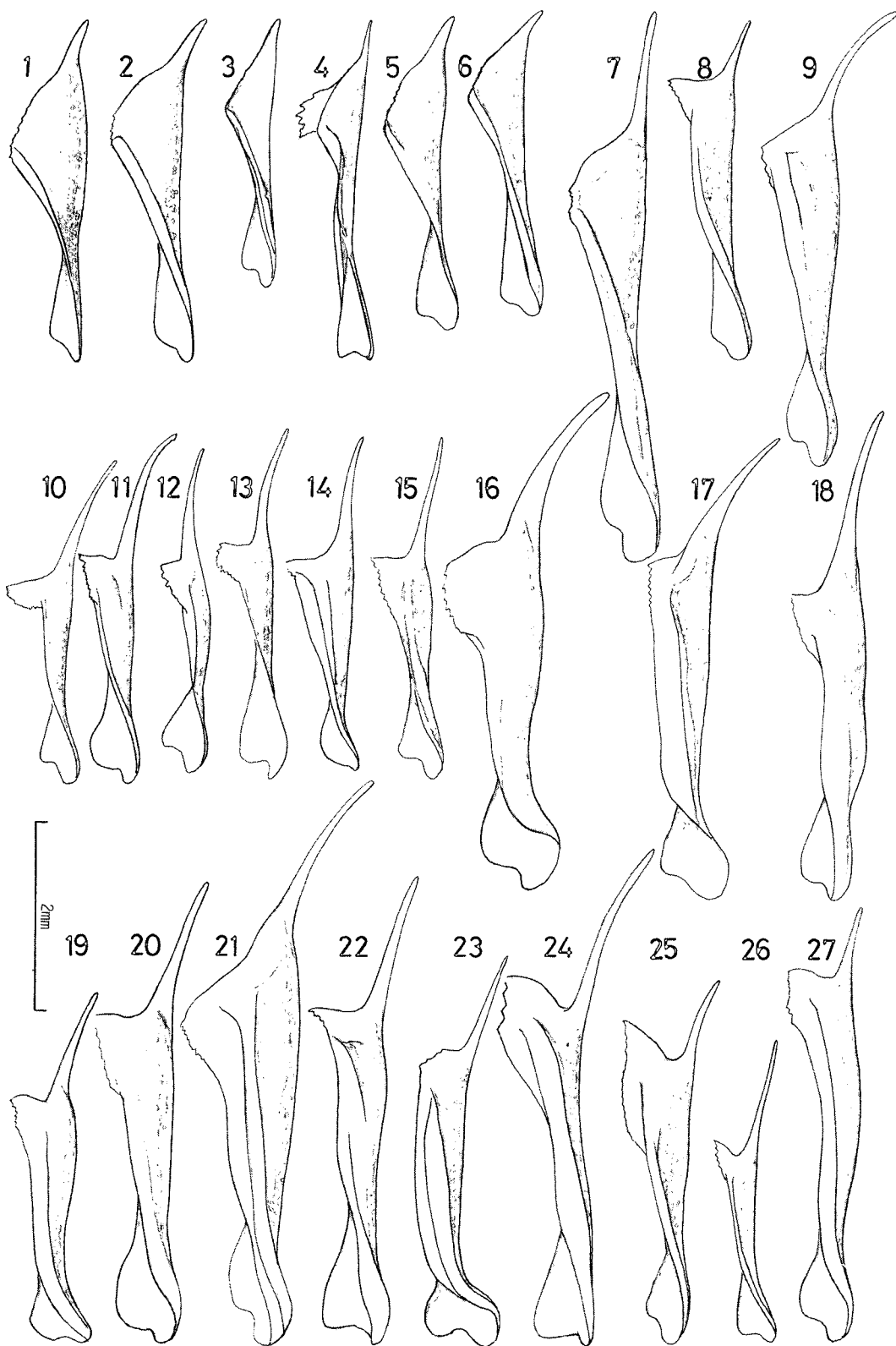
1. *Leptocarabus (Aulonocarabus) kurilensis sugai* (Mt. Rebundake, Is. Rebunto, Hokkaido, Japan, 2, VIII, 1968).
2. *Leptocarabus (Aulonocarabus) kwanmobongensis* sp. nov. (Mt. Kwanmobong, HB, ?, VII, 1934).
3. *Leptocarabus (Weolseocarabus) koreanus weolseoe* subgen. et subsp. nov. (Mt. Sōlaksan, GW, 13, VIII, 1969).
4. *Leptocarabus (Adelocarabus) semiopacus* (Mt. Sōlaksan, GW, 12, VIII, 1969).
5. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Sōlaksan, GW, 30, VII, 1982).
6. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. T'aebaeksan, GW, 27, VI, 1976).
7. *Leptocarabus (Astenocarabus) opaculus kurosawai* (Aizankei, Mt. Daisetsuzan, Hokkaido, Japan, 12-15, VII, 1970).
8. *Hemicarabus* (s. str.) *tuberculosis* (Mt. Samnipsan, HB, ?, VI, 1930).
9. *Hemicarabus* (s. str.) *tuberculosis* (Mt. Hallasan, JJ, 18, VII, 1978).
10. *Hemicarabus* (s. str.) *tuberculosis* (Oiwake Pass, Hidaka, Hokkaido, Japan, 22, VIII, 1971).
11. *Hemicarabus* (s. str.) *macleayi coreensis* (Unsurŷong, HN, 28, VII, 1936).
12. *Hemicarabus (Homoeocarabus) maeander quelpartensis* subsp. nov. (Mt. Hallasan, JJ, 20, VI, 1968).
13. *Scambocarabus kruberi hallasanensis* subsp. nov. (Mt. Hallasan, JJ, 8, VI, 1972).
14. *Cathaicus brandti* (Shienhien, China, 15, VI, 1936).
15. *Tomocarabus fraterculus affinis* subsp. nov. (Mt. Sōlaksan, GW, 29, VII, 1971).
16. *Megodontus* (s. str.) *purpurascens crenatocostatus* (Bruxelle, Belgium, ?, VI, 1975).
17. *Megodontus* (s. str.) *violaceus candisatus* (Bayrischer Wald, Buchenau, Germany, 14, IX, 1975).
18. *Megodontus (Ainocarabus) kolbei kolbei* (Mt. Apoidake, Hidaka, Hokkaido, Japan, 26, VIII, 1971).
19. *Procrustes coriaceus* (Munnes Tadder Wald, bei Kissingen, Unterfranken, Germany, 10, IX, 1976).
20. *Autocarabus auratus lotharingus* (Montpellier France, 30, III, 1975).
21. *Damaster (Koreacoptolabus) constricticollis constricticollis* subgen. nov. (Mt. Odaesan, GW, 9, VIII, 1976).
22. *Damaster (Koreacoptolabus) mirabilissimus* subgen. nov. (Mt. T'aebaeksan, GW, 27, VI, 1976).
23. *Damaster (Acoptolabus) gehini gehini* (Jyozankei, Sapporo, Hokkaido, Japan, 24, VI, 1979).
24. *Damaster (Acoptolabus) gehini munakatai* (Mt. Daisengendake, Hokkaido, Japan, 19-23, VIII, 1973).
25. *Damaster (Coptolabus) jankowskii jankowskii* (Mt. Sōlaksan, GW, 5, VIII, 1969).
26. *Damaster (Coptolabus) jankowskii quelpartianus* (Mt. Hallasan, JJ, 22, VI, 1976).
27. *Damaster (Coptolabus) fruhstorferi* (Mt. Mitake, Is. Tsushima, Nagasaki Pref., Japan, 27, IV, 1972).
28. *Damaster (Coptolabus) smaragdinus fulminifer* (Mt. Sōlaksan, GW, 12, VIII, 1969).
29. *Damaster* (s. str.) *blaptoides rugipennis* (Asahigawa, Hokkaido, Japan, 8, VII, 1977).
30. *Cychrus morawitzii* (Mt. Apoidake, Hidaka, Hokkaido, Japan, 26, VIII, 1971).



# Plate LXXI.

## Left parameres of carabids in lateral shape (1).

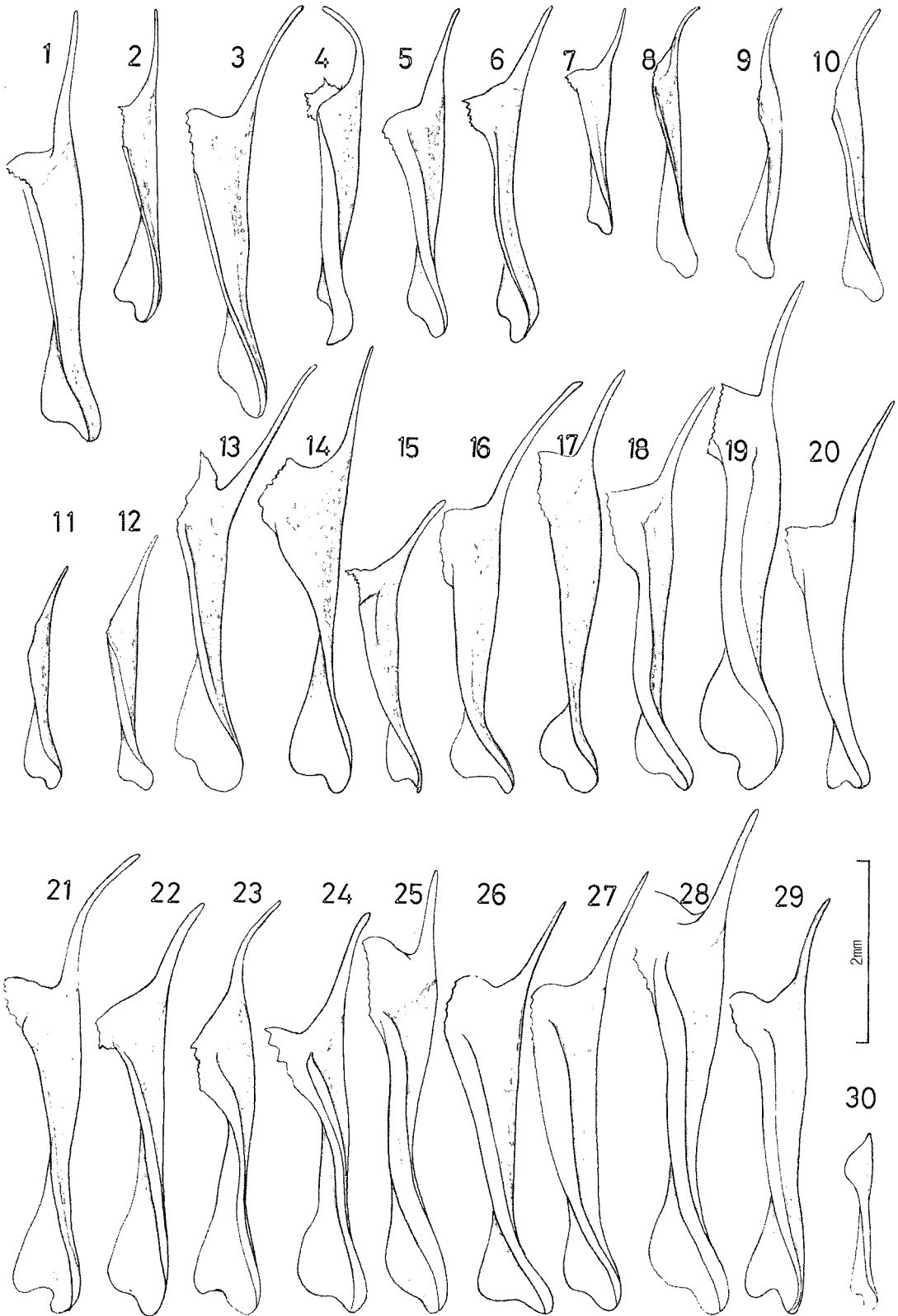
1. *Calosoma maximowiczii* (Mt. Ch'ŏnmasan, GG, 28, V, 1972).
2. *Calosoma maximowiczii* (Mt. Hallasan, JJ, 30, VII, 1972).
3. *Calosoma inquisitor cyaneus* (Nanam, HB, 10, VI, 1929).
4. *Charmosta lugens* (Ch'ŏngjin, HB, p. VIII, 1929).
5. *Campalita chinense* (Seoul GG, 14, VIII, 1971).
6. *Campalita chinense* (Kamishihoro, Tokachi, Hokkaido, Japan, 23, VII, 1970).
7. *Apotomopterus (Limnocarabus) clathratus aquatilis* comb. nov. (Chikauchi, Miyako City, Honshu, Japan, 30, VII, 1973).
8. *Apotomopterus (Euleptocarabus) porrecticollis porrecticollis* (Mt. Sotoyama, Nikko, Tochigi Pref., Honshu, Japan, 3, XI, 1969).
9. *Apotomopterus* (s. str.) *sauteri* (Tengchih, Kaoshunsien, Taiwan, ?, VIII, 1975).
10. *Carabus* (s. str.) *granulatus granulatus* (Kissingen, Unterfranken, Germany, 1, III, 1976).
11. *Carabus* (s. str.) *granulatus ussuriensis* (Mt. Kwanmobong, HB, 18, VII, 1932).
12. *Carabus* (s. str.) *granulatus telluris* (Fukushimagata, Tsukioka Pref., Honshu, Japan, 31, III, 1969).
13. *Carabus* (s. str.) *granulatus yezoensis* (Kawayu, Kushiro, Hokkaido, Japan, 10, VII, 1969).
14. *Carabus (Eutelocarabus) arvensis germaniae* (Hoffenheim, Gr. Wald, Germany, ?, VI, 1974).
15. *Carabus (Eutelocarabus) conciliator faldermanni* (Seoul, GG, ?, VII, 1961).
16. *Carabus (Isiocarabus) fiduciarius kirinicus* (Mt. Un'gilsan, GG, 22, V, 1983).
17. *Carabus (Isiocarabus) fiduciarius saishutoicus* (Mt. Hallasan, JJ, 28, VII, 1978).
18. *Carabus (Ohomopterus) dehaanii dehaanii* (Mt. Hieizan, Kyoto Pref., Honshu, Japan, 15, I, 1967).
19. *Carabus (Ohomopterus) albrechti freyi* (Ogi, Is. Sadogashima, Honshu, Japan, 21, XI, 1971).
20. *Carabus (Ohomopterus) esakii* (Izu Peninsula, Shizuoka Pref., Honshu, Japan, 20, XII, 1977).
21. *Carabus (Ohomopterus) insulicola insulicola* (Kizoro, Saitama Pref., Honshu, Japan, ?, II, 1968).
22. *Carabus (Eucarabus) ullrichi ullrichi* (Slov., Lipt., Osada, Czechoslovakia, ?, VIII, 1968).
23. *Carabus (Parhomopterus) sternbergi cartereti* (Mt. Sŏlaksan, GW, 27, VII, 1982).
24. *Lipaster (Morphocarabus) monilis consitus* Muhlhouse, France, 20, IV, 1976).
25. *Lipaster (Morphocarabus) hummeli tristichus* (Khingan, Manchuria, 20, VII, 1933).
26. *Lipaster (Leptinocarabus) wulffiusi opacipennis* (Mt. Sŏlaksan, GW, 12, VIII, 1969).
27. *Leptocarabus* (s. str.) *procerulus procerulus* (Senjyogahara, Nikko, Tochigi Pref., Honshu, Japan, 5, XI, 1969).



# Plate LXXII.

## Left Parameres of carabids in lateral view (2).

1. *Leptocarabus (Aulonocarabus) kurilensis sugai* (Mt. Rebundake, Is. Rebunto, Hokkaido, Japan, 2, VIII, 1968).
2. *Leptocarabus (Aulonocarabus) kwanmobongensis* sp. nov. (Mt. Kwanmobong, HB, ?, VII, 1934).
3. *Leptocarabus (Weolseocarabus) koreanus weolseoe* subgen. et subsp. nov. (Mt. Sōlaksan, GW, 13, VIII, 1969).
4. *Carabus (Adelocarabus) semiopacus* (Mt. Sōlaksan, GW, 12, VIII, 1969).
5. *Carabus (Adelocarabus) seishinensis seishinensis* (Mt. Sōlaksan, GW, 30, VII, 1982).
6. *Carabus (Adelocarabus) seishinensis seishinensis* (Mt. T'aebaeksan, GW, 27, VI, 1976).
7. *Leptocarabus (Astenocarabus) opaculus kurosawai* (Aizankei, Mt. Daisetsuzan, Hokkaido, Japan, 12-15, VII, 1970).
8. *Hemicarabus* (s. str.) *tuberculosis* (Mt. Samnipsan, HB, 2, ?, VI, 1930).
9. *Hemicarabus* (s. str.) *tuberculosis* (Mt. Hallasan, JJ, 18, VII, 1978).
10. *Hemicarabus* (s. str.) *tuberculosis* (Oiwake Pass, Hidaka, Hokkaido, Japan, 22, VIII, 1971).
11. *Hemicarabus* (s. str.) *macleayi coreensis* (Unsurōng, HN, 28, VII, 1936).
12. *Hemicarabus (Homoeocarabus) maeander quelpartensis* subsp. nov. (Mt. Hallasan, JJ, 20, VI, 1968).
13. *Scambocarabus kruberi hallasanensis* subsp. nov. (Mt. Hallasan, JJ, 8, VI, 1972).
14. *Cathaicus brandti* (Shienhien, China, 15, VI, 1936).
15. *Tomocarabus fraterculus affinis* subsp. nov. (Mt. Sōlaksan, GW, 29, VII, 1971).
16. *Megodontus* (s. str.) *purpurascens crenatocostatus* (Bruxelle, Belgium, ?, VI, 1975).
17. *Megodontus* (s. str.) *violaceus candisatus* (Bayrischer Wald, Buchenau, Germany, 14, IX, 1975).
18. *Megodontus (Ainocarabus) kolbei kolbei* (Mt. Apoidake, Hidaka, Hokkaido, Japan, 26, VIII, 1971).
19. *Procrustes coraceus* (Munnes Tadtter Wald, bei Kissingen, Unterfranken, Germany, 10, IX, 1976).
20. *Autocarabus auratus lotharingus* (Montpellier, France, 30, III, 1975).
21. *Damaster (Koreacoptolabus) constricticollis constricticollis* subgen. nov. (Mt. Odaesan, GW, 9, VIII, 1976).
22. *Damaster (Koreacoptolabus) constricticollis constricticollis* subgen. nov. (Mt. T'aebaeksan, GW, 27, VI, 1976).
23. *Damaster (Acoptolabus) gehini gehini* (Jyozankei, Sapporo, Hokkaido, Japan, 24, VI, 1979).
24. *Damaster (Acoptolabus) gehini munakatai* (Mt. Daisengendake, Hokkaido, Japan, 19-23, VIII, 1973).
25. *Damaster (Coptolabus) jankowskii jankowskii* (Mt. Sōlaksan, GW, 5, VIII, 1969).
26. *Damaster (Coptolabus) jankowskii quelpartianus* (Mt. Hallasan, JJ, 22, VI, 1976).
27. *Damaster (Coptolabus) fruhstorferi* (Mt. Mitake, Is. Tsushima, Nagasaki Pref., Japan, 27, IV, 1972).
28. *Damaster (Coptolabus) smaragdinus fulminifer* (Mt. Sōlaksan, GW, 12, VIII, 1969).
29. *Damaster* (s. str.) *blaptoides rugipennis* (Asahigawa, Hokkaido, Japan, 8, VII, 1977).
30. *Cychrus morawitzi* (Mt. Apoidake, Hidaka, Hokkaido, Japan, 26, VIII, 1971).



# Plate LXXIII.

## Endophallic copulatory pieces of carabids in dorsal shape (1).

1. *Carabus (Isiocarabus) fiduciarius kirinicus* (Mt. Un'gilsan, GG, 22, V, 1983).
2. *Carabus (Isiocarabus) fiduciarius saishutoicus* (Mt. Hallasan, JJ, 28, VII, 1978).
3. *Carabus (Ohomopterus) dehaanii strenus* (Mt. Sobozan, Ohita Pref., Kyushu, Japan, 29, XII, 1969).
4. *Carabus (Ohomopterus) lewisianus awakazusanus* (Mt. Tomisan, Chiba Pref., Honshu, Japan, 2, I, 1969).
5. *Carabus (Ohomopterus) albrechti freyi* (Ogi, Is. Sadogashima, Honshu, Japan, 21, XI, 1971).
6. *Carabus (Ohomopterus) yamato* (Mt. Katsuragisan, Nara Pref., Honshu, Japan, 30, V-4, VI, 1975).
7. *Carabus (Ohomopterus) yaconinus iwawakianus* (Mt. Iwawakisan, Osaka Pref., Honshu, Japan, 27-29, V 1977).
8. *Carabus (Ohomopterus) insulicola arrowianus* (Mt. Honguzan, Aichi Pref., Honshu, Japan, 17, VI, 1968).
9. *Carabus (Ohomopterus) insulicola nishigawai* (Kanamurubata, Bosohanto, Chiba Pref., Honshu, Japan, 1, I, 1969).
10. *Carabus (Ohomopterus) insulicola maiyasanus* (Yamanomachi, Kobe City, Honshu, Japan, 1, III, 1970).
11. *Carabus (Parhomopterus) sternbergi cartereti* (Mt. Odaesan, GW, 18, IX, 1982).
12. *Carabus (Parhomopterus) sternbergi cartereti* (Mt. T'aebaeksan, GW, 27, VI, 1976).
- 13,14. *Carabus (Parhomopterus) sternbergi sobaeksanensis* subsp. nov. (Mt. Sobaeksan, GB, 24, VII, 1977).
15. *Carabus (Parhomopterus) sternbergi sobaeksanensis* subsp. nov. (Mt. Chuhŭlsan, GB, 5, VI, 1983).
- 16,17. *Carabus (Parhomopterus) sternbergi sobaeksanensis* subsp. nov. (Mt. P'algongsan, GB, 10, IX, 1982).
18. *Carabus (Parhomopterus) sternbergi tongdosanus* subsp. nov. (Mt. Sinbulsan, GN, 25, IX, 1982).
- 19,20. *Carabus (Parhomopterus) sternbergi chirisanensis* subsp. nov. (Mt. Chirisan, GN, 13, VII, 1981).
21. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Pangdaesan, GW, 27, VII, 1974).
22. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Myŏngjisan, GG, 6, VI, 1976).
- 23,24. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Soyosan, GG, 5, VI, 1977).
25. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Aengmubong, GG, 26, VI, 1971).
26. *Carabus (Parhomopterus) sternbergi sternbergi* (Kwangnŭng, GG, 15, VIII, 1971).
27. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Ch'ŏnmasan, GG, 16, V, 1972).
28. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Tobongsan, GG, 119, VIII, 1976).

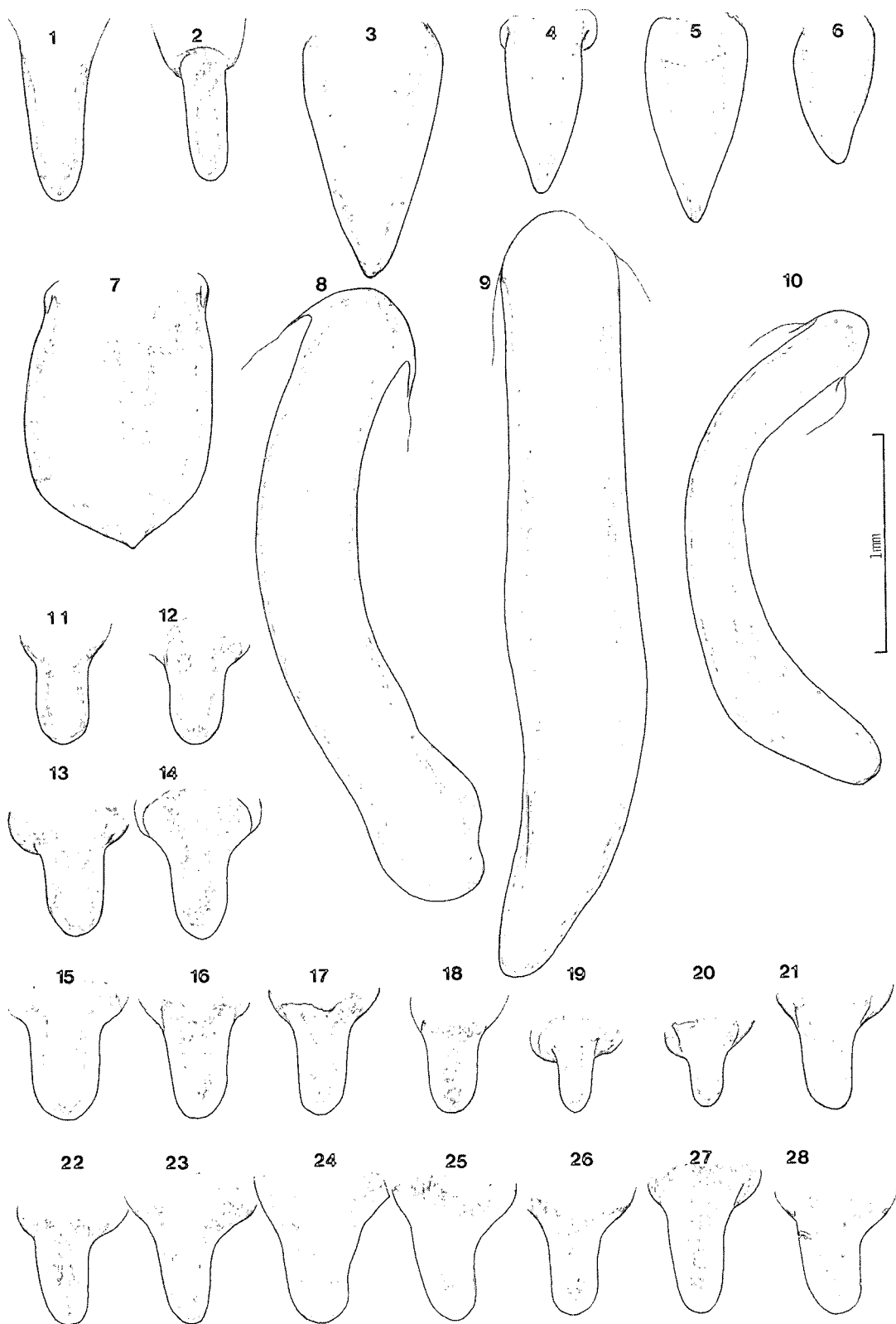


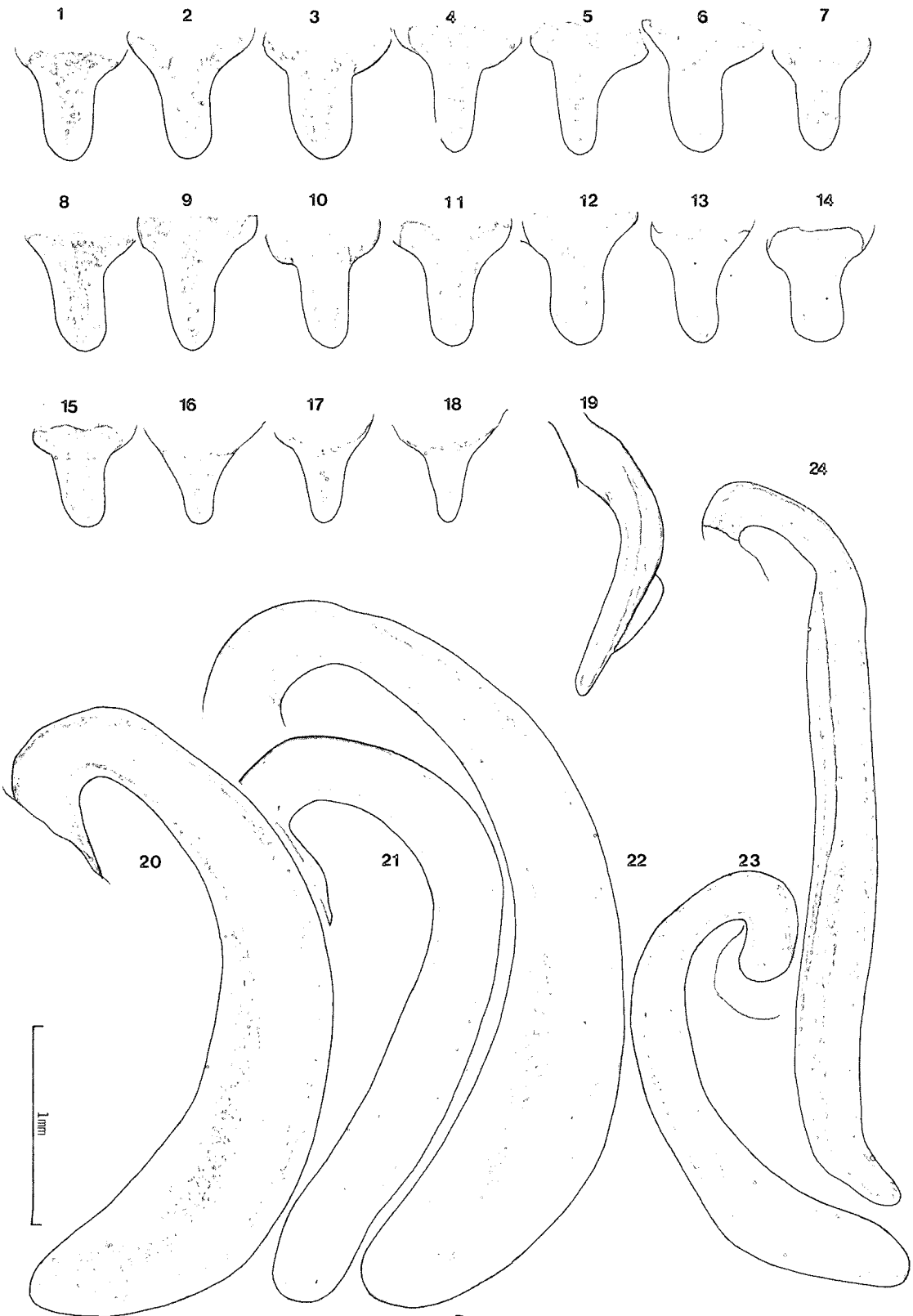
Plate LXXIV.

Endophallic copulatory pieces of carabids in dorsal shape (2).

1. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Pukhansan, GG, 11, VII, 1976).
2. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Tögamsan, GG, 6, IX, 1976).
3. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Yongmunsan, GG, 7, VI, 1977).
4. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Ch'iaksan, GW, 14, VI, 1976).
- 5,6. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Kwangdōksan, CN, 11, VII, 1982).
- 7,8. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Kyeryongsan, CN, 14, IX, 1975).
- 9,10. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Songnisan, CB, 10, VI, 1977).
11. *Carabus (Parhomopterus) sternbergi honamensis* subsp. nov. (Mt. Chogyesan, JN, 10, VIII, 1976).
12. *Carabus (Parhomopterus) sternbergi honamensis* subsp. nov. (Mt. Chogyesan, JN, 5, VI, 1983).
13. *Carabus (Parhomopterus) sternbergi honamensis* subsp. nov. (Is. Ch'ujado, JJ, 31, VII, 1972).
- 14,15. *Carabus (Parhomopterus) sternbergi touzalini* (Mt. Hallasan, JJ, 22, V, 1968).
- 16,17,18. *Carabus (Parhomopterus) sternbergi kojedoensis* subsp. nov. (Is. Kōjedo, GN, 19, VI, 1970).

Endophallic copulatory pieces in right lateral shape except No. 23 which is seen from left side.

19. *Carabus (Ohomopterus) esakii* (Izu Peninsula, Shizuoka Pref., Honshu, Japan, 20, XII, 1973).
20. *Carabus (Ohomopterus) insulicola insulicola* (Kizoro, Saitama Pref., Honshu, Japan, ?, II, 1968).
21. *Carabus (Ohomopterus) insulicola arrowianus* (Mt. Honguzan, Aichi Pref., Honshu, Japan, 17, VI, 1963).
22. *Carabus (Ohomopterus) insulicola nishigawai* (Kanamurubata, Bosohanto, Chiba Pref., Honshu, Japan, 1, I, 1969).
23. *Carabus (Ohomopterus) insulicola maiyasanus* (Yamanomachi, Kobe City, Honshu, Japan, 1, III, 1970).
24. *Carabus (Ohomopterus) uenoi* (Mt. Katsurisan, Nara Pref., Honshu, Japan, 30, V, -4, VI, 1975).



# Plate LXXV.

## Endophallic aggonoporial lobes of carabids (1).

1. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Sölaksan, GW, 5, VIII, 1969).
2. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Sölaksan, GW, 21, VIII, 1969).
3. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Pangdaesan, GW, 27, VII, 1974).
4. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Wangbangsan, GW, 6, VIII, 1976).
5. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Myöngjisan, GG, 27, V, 1978).
6. *Damaster (Coptolabrus) jankowskii jankowskii* (Kwangnŭng, GG, 15, VIII, 1971).
7. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Aengmubong, GG, 15, VI, 1976).
8. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Pukhansan, GG, 11, VII, 1976).
9. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Tobongsan, GG, 19, VIII, 1976).
10. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Töğamsan, GG, 6, IX, 1976).
11. *Damaster (Coptolabrus) jankowskii jankowskii* (Konjiam, GG, 1, VIII, 1976).
12. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Yongmunsan, GG, 14, IX, 1980).
13. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Ch'iaksan, GW, 14, VI, 1976).
14. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Sobaeksan, GB, 23, VII, 1977).
15. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Kyeryongsan, CN, 14, IX, 1975).
- 16,17. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Songnisan, CB, 10, VI, 1977).
- 18,19. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Palgongsan, GB, 10, IX, 1982).
20. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. T'ohamsan, GB, 22, IX, 1982).
- 21,22. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Chogyesan, JN, 5, VI, 1983).
23. *Damaster (Coptolabrus) jankowskii kangwonensis* subsp. nov. (Mt. Odaesan, GW, 5, VIII, 1971).
24. *Damaster (Coptolabrus) jankowskii kangwonensis* subsp. nov. (Mt. Odaesan, GW, 9, VIII, 1976).
- 25,26. *Damaster (Coptolabrus) jankowskii kangwonensis* subsp. nov. (Mt. T'aebaeksan, GW, 27, VI, 1976).
27. *Damaster (Coptolabrus) jankowskii elegans* subsp. nov. (Mt. Chirisan, GN, 12, VI, 1983).
28. *Damaster (Coptolabrus) jankowskii fusanus* (Pusan, GN, 3, VI, 1977).
- 29,30. *Damaster (Coptolabrus) jankowskii kojensis* (Is. Kōjedo, GN, 22-31, VII, 1969).
- 31,32. *Damaster (Coptolabrus) jankowskii kojensis* (Mt. Kūmsan in Is. Namhaedo, GN, 13, VI, 1977).
33. *Damaster (Coptolabrus) jankowskii quelpartianus* (Mt. Hallasan, JJ, 22, VI, 1976).
34. *Damaster (Coptolabrus) jankowskii quelpartianus* (Mt. Hallasan, JJ, 18, VII, 1978).
35. *Damaster (Coptolabrus) jankowskii quelpartianus* (Chungmun, JJ, 20, VII, 1978).

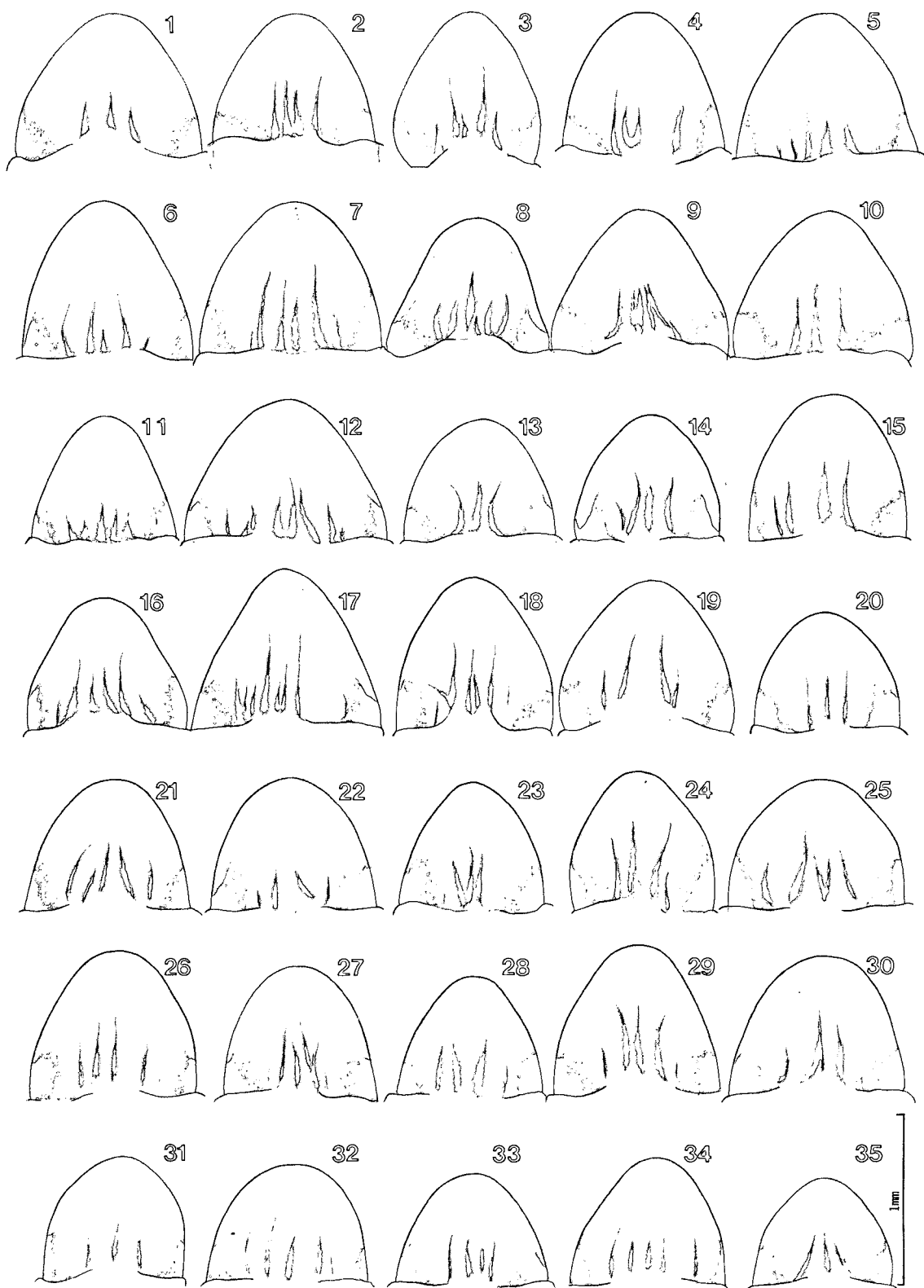


Plate LXXVI.

Endophallic aggonoporial lobes of carabids (2).

1. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Kūmgangsan, GW, ?, VIII, 1935).
2. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Sōlaksan, GW, 12, VIII, 1969).
3. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Odaesan, GW, 9, VIII, 1976).
4. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Sogūmgang, GW, 28, VII, 1971).
5. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Pangdaesan, GW, 30, VII, 1974).
6. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Yongmunsan, GG, 14, IX, 1980).
- 7,8. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. T'aebaeksan, GW, 28, VI, 1976).
9. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Sobaeksan, GB, 24, VII, 1977).
10. *Damaster (Coptolabrus) smaragdinus branickii* (Kwangnūng, GG, 3, IX, 1971).
11. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Pukhansan, GG, 12, VII, 1976).
12. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Tobongsan, GG, 19, VIII, 1976).
- 13,14. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Wangbangsan, GG, 9, VIII, 1976).
15. *Damaster (Coptolabrus) smaragdinus branickii* (Konjiam, GG, 6, IX, 1976).
- 16,17. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Ch'iaksan, GW, 2, VIII, 1982).
- 18,19. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Kyeryongsan, CN, 14, IX, 1975).
20. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Songnisan, CB, 10, VI, 1977).
21. *Damaster (Coptolabrus) smaragdinus branickii* (Koesan, CB, 28, VII, 1978).
- 22,23. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. P'algongsan, GB, 24, V, 1983).
24. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. T'ohamsan, GB, 22, IX, 1982).
25. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Yōngch'wisan, GN, 2, VI, 1983).

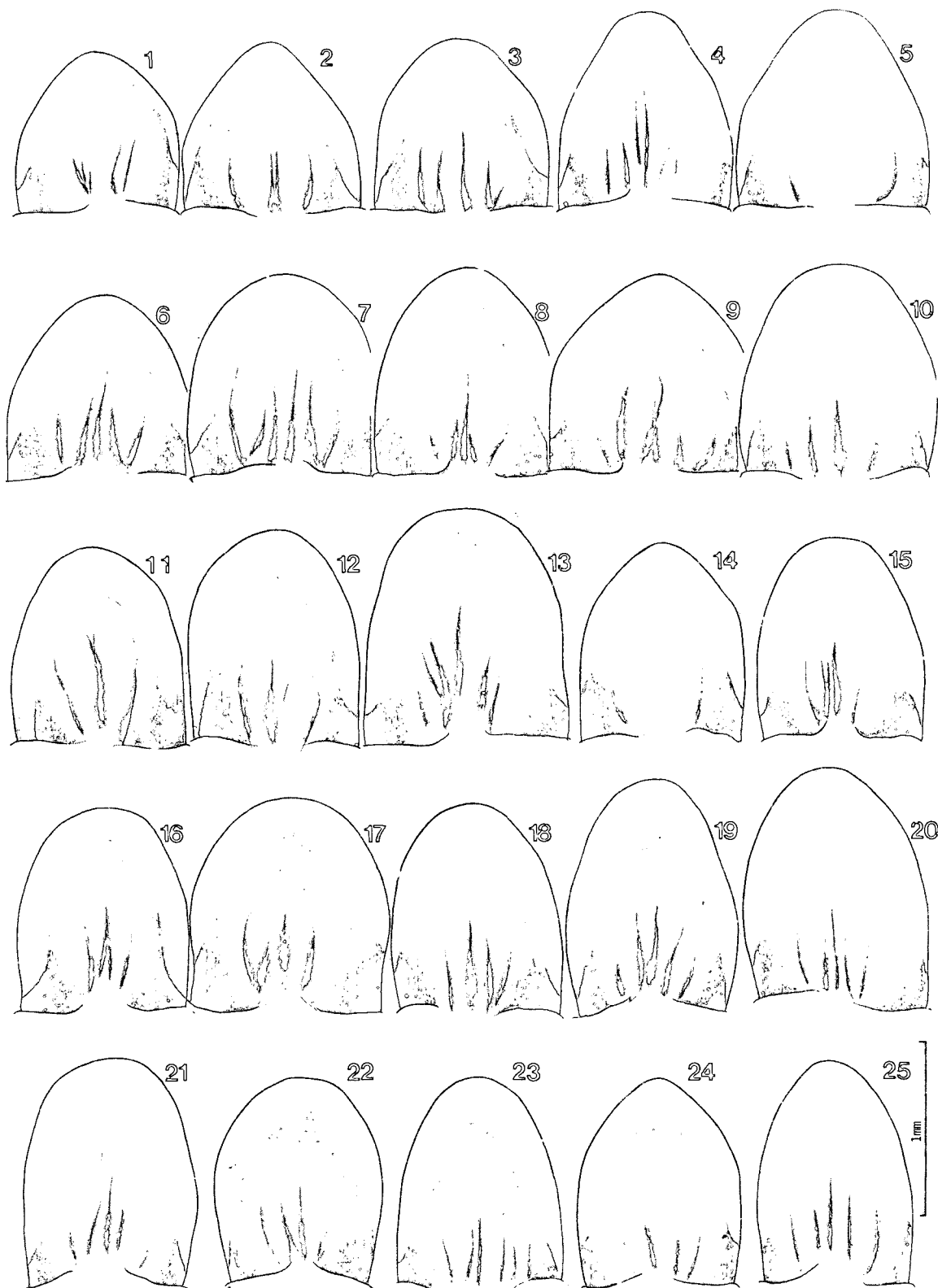


Plate LXXVII.

Endophallic aggonoporial lobes of carabids (3).

1. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Yöngch'wisan, GN, 2, VI, 1983).
2. *Damaster (Coptolabrus) smaragdinus branickii* (Hamyang, GN, 31, VII, 1980).
- 3,4. *Damaster (Coptolabrus) smaragdinus branickii* (Sanin Myön, GN, 28, V, 1983).
5. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Muhaksan, GN, 24, IX, 1982).
- 6,7. *Damaster (Coptolabrus) smaragdinus branickii* (Is. Kōjedo, GN, 16-20, VII, 1970).
8. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Naejangsan, JB, 6, VI, 1968).
9. *Damaster (Coptolabrus) smaragdinus branickii* (Koch'ang, JB, 31, V, 1973).
10. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Yudalsan, JN, 19, VI, 1976).
11. *Damaster (Coptolabrus) smaragdinus hongdoensis* subsp. nov. (Is. Hongdo, JN, 10, VIII, 1981).
12. *Damaster (Coptolabrus) smaragdinus sangjaei* subsp. nov. (Mt. Chirisan, GN, 6, VI, 1983).
13. *Damaster (Coptolabrus) smaragdinus hoenggandoensis* subsp. nov. (Is. Hoenggando, JJ, 4, VIII, 1970).
- 14,15. *Damaster (Coptolabrus) smaragdinus monilifer* (Mt. Hallasan, JJ, 29, VII, 1978).
16. *Damaster* (s. str.) *blaptoides rugipennis* (Asahigawa, Hokkaido, Japan, 8, VII, 1977).
17. *Damaster* (s. str.) *blaptoides capito* (Mt. Kinpokusen, Is. Sado, Niigata Pref., Honshu, Japan, 2-5, III, 1971).
18. *Damaster* (s. str.) *blaptoides fortunei* (Is. Awashima, Niigata, Pref., Honshu, Japan, 31, III, 1970).
19. *Damaster* (s. str.) *blaptoides oxuroides* (Kizoro, Saitama Pref., Honshu, Japan, ?, III, 1968).
20. *Damaster* (s. str.) *blaptoides montanus* (Mt. Adatarasan, Fukushima Pref., Honshu, Japan, 8, IV, 1970).

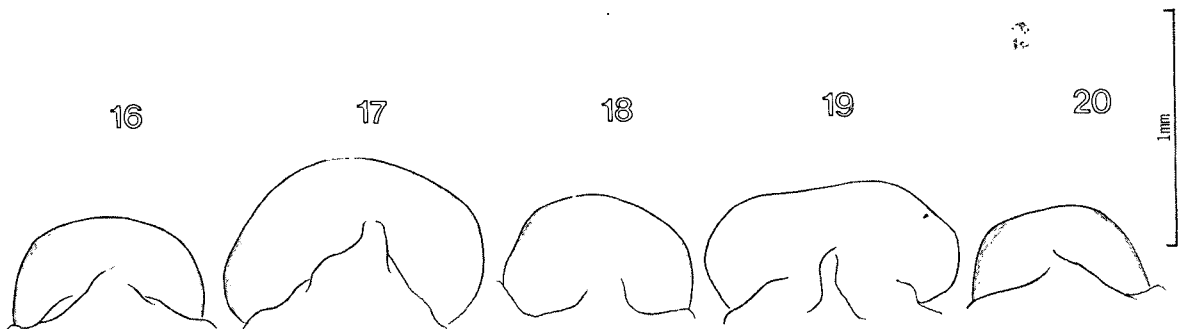
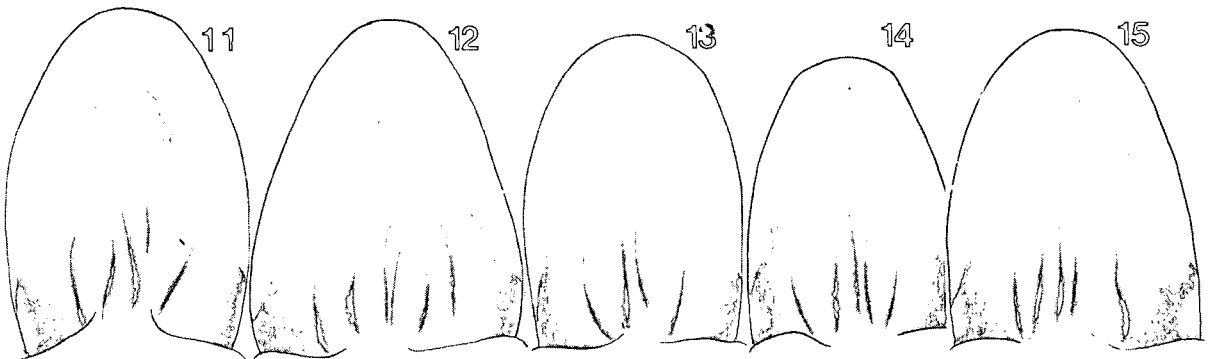
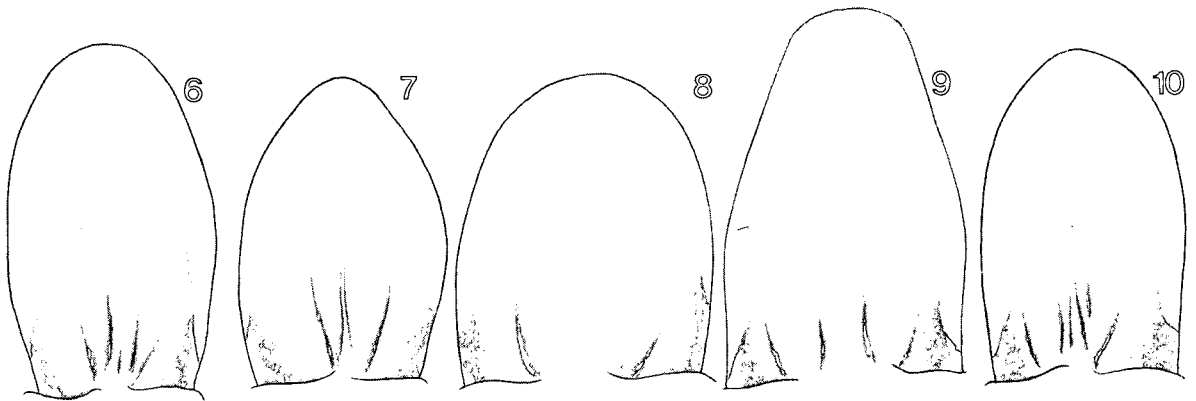
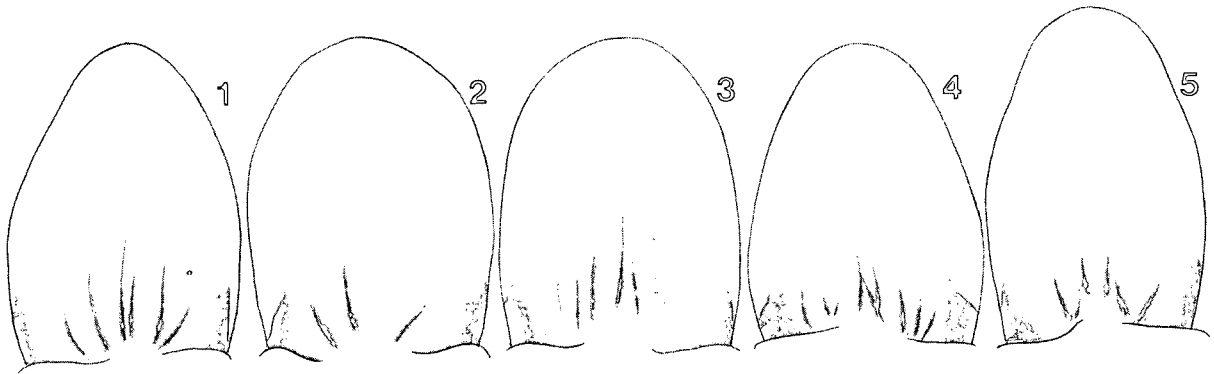


Plate LXXVIII.

Female genitalia of carabids in lateral view (1).

1. *Calosoma maximowiczii* (Mt. Sogūngang, GW, 15, VIII, 1972).
2. *Calosoma inquisitor cyanescens* (Kwangnūng, GG, 24, V, 1970).
3. *Charmosta lugens* (Ch'ongjin, HB, ?, VII, 1930).
4. *Campalita chinense* (Seoul, GG, 28, V, 1971).
5. *Apotomopterus (Limnocarabus) clathratus maacki* (Nanam, HB, ?, VIII, 1929).
6. *Apotomopterus (Limnocarabus) clathratus maacki* (Harbin, Manchuria, ?, VIII, 1937).
7. *Apotomopterus (Limnocarabus) clathratus aquatilis* comb. nov. (Lake Jyusanko, Aomori Pref., Honshu, Japan, 4-6, IX, 1971).
8. *Apotomopterus (Euleptocarabus) porrecticollis porrecticollis* (Mt. Sotoyama, Nikko, Tochigi Pref., Honshu, Japan, 3, XI, 1969).
9. *Apotomopterus* (s. str.) *sauteri* (Tengchih, Kaoshunsien, Taiwan, ?, VIII, 1975).
10. *Carabus* (s. str.) *granulatus ussuriensis* (Mt. Kwanmobong, HB, 18, VII, 1932).
11. *Carabus* (s. str.) *granulatus ussuriensis* (Nanam, HB, ?, VI, 1930).
12. *Carabus (Eutelocarabus) arvensis germaniae* (Hoffenheim, Gr. Wald, Germany, ?, VI, 1974).
13. *Carabus (Eutelocarabus) conciliator faldermanni* (Nanam, HB, ?, V, 1928).
14. *Carabus (Eutelocarabus) conciliator hokkaidensis* (Mt. Apoidake, Hidaka, Hokkaido, Japan, 5-9, VIII, 1970).

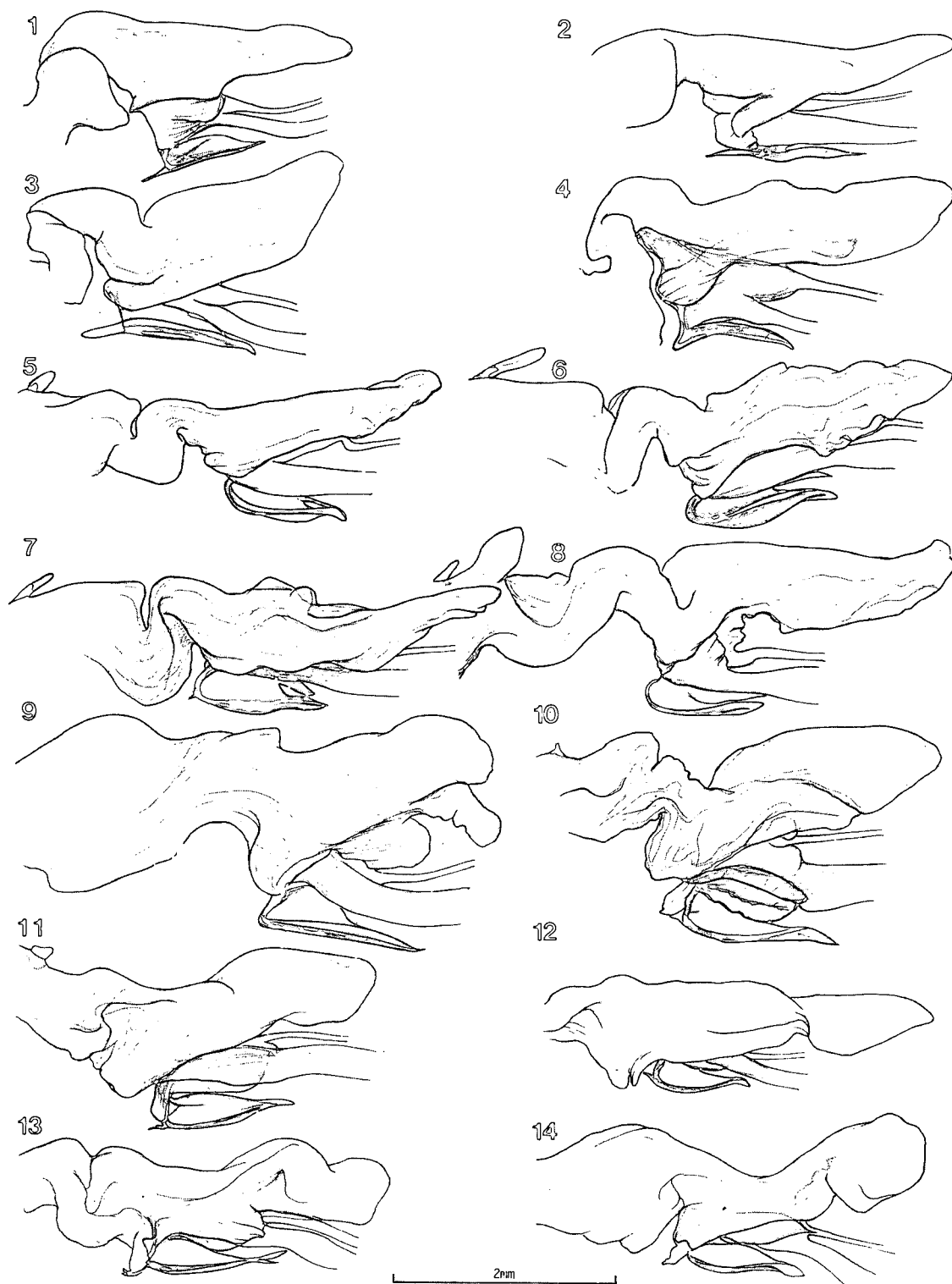


Plate LXXIX.

Female genitalia of carabids in lateral view (2).

1. *Carabus (Isiocarabus) fiduciarus kirinicus* (Mt. Un'gilsan, GG, 22, V, 1983).
2. *Carabus (Isiocarabus) fiduciarus kirinicus* (Mt. Ch'iaksan, GW, 10, VIII, 1971).
3. *Carabus (Isiocarabus) fiduciarus saishutoicus* (Mt. Hallasan, JJ, 8, VI, 1972).
4. *Carabus (Ohomopterus) dehaanii dehaanii* (Mt. Hieizan, Kyoto Pref., Honshu, Japan, 15, I, 1976).
5. *Carabus (Ohomopterus) japonicus tsushimae* (Mt. Mitake, Is. Tsushima, Nagasaki Pref., Japan, 27, III, 1972).
6. *Carabus (Ohomopterus) albrechti freyi* (Ogi, Is. Sadogashima, Honshu, Japan, 21, XI, 1971).
7. *Carabus (Ohomopterus) esakii* (Izu Peninsula, Shizuoka Pref., Honshu, Japan, 20, XII, 1973).
8. *Carabus (Ohomopterus) yaconinus yaconinus* (Mt. Hanataka, Shimane Pref., Honshu, Japan, 20, III, 1969).
9. *Carabus (Ohomopterus) insulicola insulicola* (Kizoro, Saitama Pref., Honshu, Japan, ?, II, 1968).
10. *Carabus (Ohomopterus) uenoi* (Mt. Katsurisan, Nara Pref., Honshu, Japan, 30, V, -4, VI, 1975).

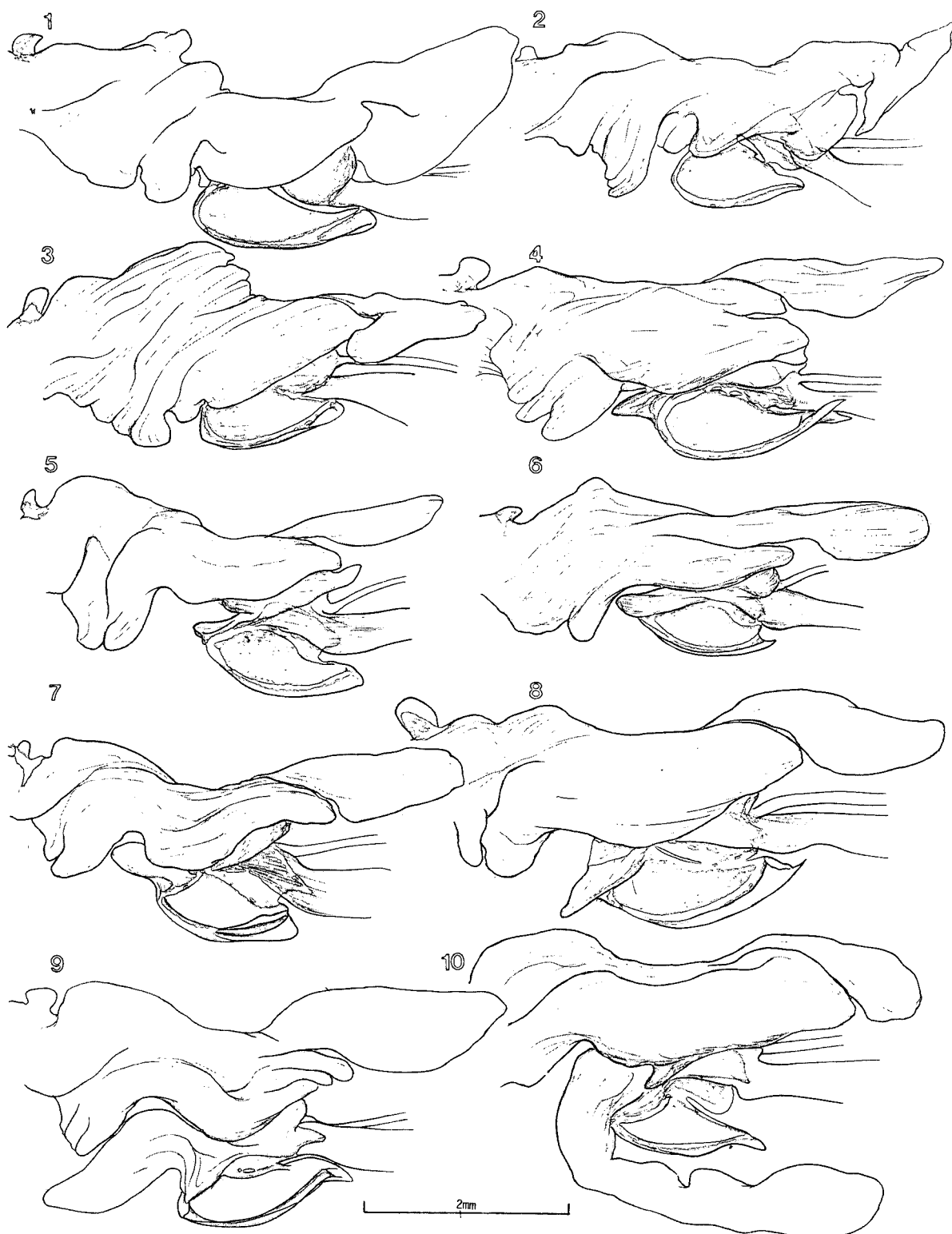
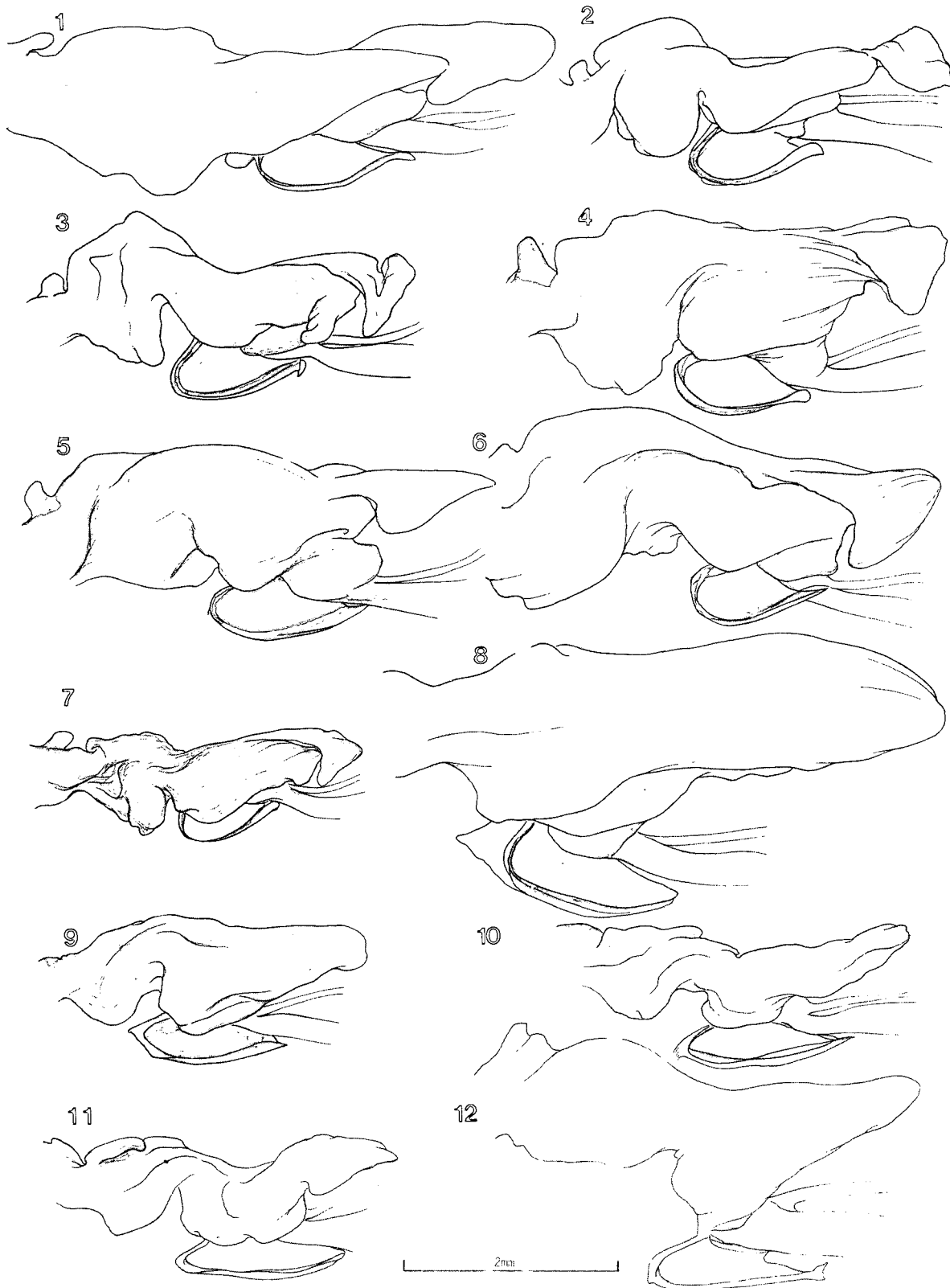


Plate LXXX.

Female genitalia of carabids in lateral view (3).

1. *Carabus (Eucarabus) ullrichi ullrichi* (Slov., Lipt., Osada, Czechoslovakia, ?, VIII, 1968).
2. *Carabus (Parhomopterus) sternbergi huchangensis* subsp. nov. (Huch'ang, PB, 26, VII, 1935).
3. *Carabus (Parhomopterus) sternbergi cartereti* (Mt. Sölaksan, GW, 27, VII, 1982).
4. *Carabus (Parhomopterus) sternbergi chirisanensis* subsp. nov. (Mt. Chirisan, GN, 13, VII, 1981).
5. *Carabus (Parhomopterus) sternbergi touzalini* (Mt. Hallasan, JJ, 7, VI, 1972).
6. *Carabus (Parhomopterus) namhaedoensis* sp. nov. (Mt. Kumsan in Is. Namhaedo, GN, 13, VI, 1977).
7. *Carabus (Orientocarabus) billbergi pumilus* subgen. nov. (Pujöllyöng, HN, ?, VIII, 1935).
8. *Lipaster (Morphocarabus) monilis consitus* (Muhlhouse, France, 20, IV, 1976).
9. *Lipaster (Leptinocarabus) wulffiussi ssangnamensis* subsp. nov. (Ssangnamdong, Huch'ang, PB, 14, VII, 1937).
10. *Lipaster (Leptinocarabus) wulffiussi opacipennis* (Mt. Sölaksan, GW, 12, VIII, 1969).
11. *Lipaster (Leptinocarabus) wulffiussi alpinus* subsp. nov. (Mt. T'aebaeksan, GW, 27, VI, 1976).
12. *Leptocarabus* (s. str.) *procerulus procerulus* (Senjyogahara, Nikko, Tochigi Pref., Honshu, Japan, 5, XI, 1969).



# Plate LXXXI.

## Female genitalia of carabids in lateral view (4).

1. *Leptocarabus (Aulonocarabus) kurilensis sugai* (Mt. Rebundake, Is. Rebunto, Hokkaido, Japan, 2, VIII, 1968).
2. *Leptocarabus (Aulonocarabus) canaliculatus careniger* (Mt. Kwanmobong, HB, 28, VII, 1934).
3. *Leptocarabus (Aulonocarabus) canaliculatus vojnitzi* (Hyesanjin, HN, ?, VII, 1937).
4. *Leptocarabus (Aulonocarabus) kwanmobongensis* sp. nov. (Mt. Kwanmobong, HB, 18, VII, 1932).
5. *Leptocarabus (Aulonocarabus) kwanmobongensis* sp. nov. (Mt. Kwanmobong, HB, 28, VII, 1934).
6. *Leptocarabus (Weolseocarabus) koreanus weolseoe* subgen. et subsp. nov. (Mt. Sölaksan, GW, 9, VIII, 1969).
7. *Leptocarabus (Weolseocarabus) koreanus weolseoe* subgen. et subsp. nov. (Mt. Kūmgangsan, GW, 2, VIII, 1932).
8. *Leptocarabus (Adelocarabus) semiopacus* (Mt. Sölaksan, GW, 13, VIII, 1969).
9. *Leptocarabus (Adelocarabus) semiopacus* (Mt. Sölaksan, GW, 23, VII, 1977).
10. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Kwanmobong, HB, 18, VII, 1932).
11. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Sölaksan, GW, 13, VIII, 1969).
12. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Myōngjisan, GG, 7, VI, 1976).
13. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Kyeryongsan, CN, 14, IX, 1975).
14. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. P'alongsan, GB, 10, IX, 1982).
15. *Leptocarabus (Adelocarabus) arboreus arboreus* (Aizankei, Mt. Daisetsuzan, Hokkaido, Japan, 12-15, VII, 1970).
16. *Leptocarabus (Astenocarabus) opaculus kurosawai* (Aizankei, Mt. Daisetsuzan, Hokkaido, Japan, 12-15, VII, 1970).
17. *Leptocarabus (Pentacarabus) harmandi okutamaensis* (Mt. Mitsutogeyama, Yamanashi Pref., Honshu, Japan, 2, VI, 1971).

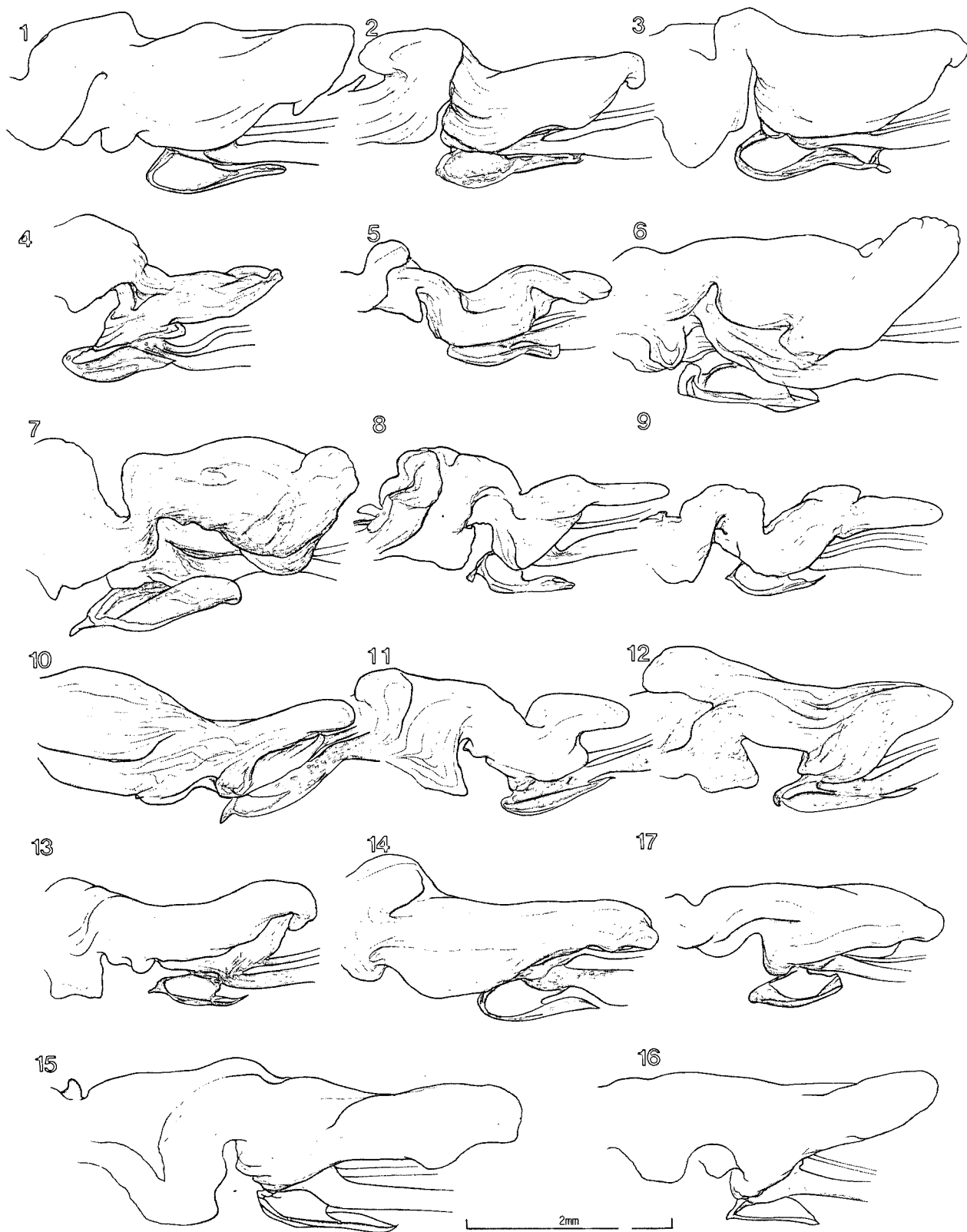


Plate LXXXII.

Female genitalia of carabids in lateral view (5).

1. *Hemicarabus* (s. str.) *tuberculosis* (Mt. Hallasan, JJ, 29, VII, 1978).
2. *Hemicarabus* (s. str.) *macleayi coreensis* (Mt. Turyusan, HB, 21, VII, 1936).
3. *Hemicarabus* (*Homoeocarabus*) *maeander quelpartensis* subsp. nov. (Mt. Hallasan, JJ, 20, VI, 1968).
4. *Scambocarabus kruberi kruberi* (Mt. Kwanmobong, HB, 18, VII, 1932).
5. *Tomocarabus fraterculus affinis* subsp. nov. (Mt. Sölaksan, GW, 9, VI, 1971).
6. *Tomocarabus fraterculus affinis* subsp. nov. (Mt. Odaesan, GW, 18, IX, 1982).
7. *Tomocarabus fraterculus affinis* subsp. nov. (Mt. Myöngjisan, GW, 27, V, 1978).
8. *Tomocarabus fraterculus affinis* subsp. nov. (Mt. Mt. Chirisan, GN, 6, VI, 1983).
9. *Megodontus* (s. str.) *purpurascens crenatocostatus* (Bruxelle, Belgium, ?, VI, 1975).
10. *Megodontus* (s. str.) *violaceus candisatus* (Bayriseher Wald, Buchenau, Germany, 14, IX, 1975).
11. *Megodontus* (*Ainocarabus*) *kolbei kolbei* (Mt. Apoidake, Hidaka, Hokkaido, Japan, 26, VIII, 1971).
12. *Procrustes coriaceus* (Munnes Tadtter Wald, bei Kissingen, Unterfranken, Germany, 10, IX, 1976).
13. *Procrustes* (*Nabicarabus*) *vietinghoffi borealis* subgen. et subsp. nov. (Mt. Kwanmobong, HB, 4, VIII, 1933).
14. *Procrustes* (*Nabicarabus*) *vietinghoffi caesareus* subgen. nov. (Khingan, Manchuria, 20, VII, 1933).

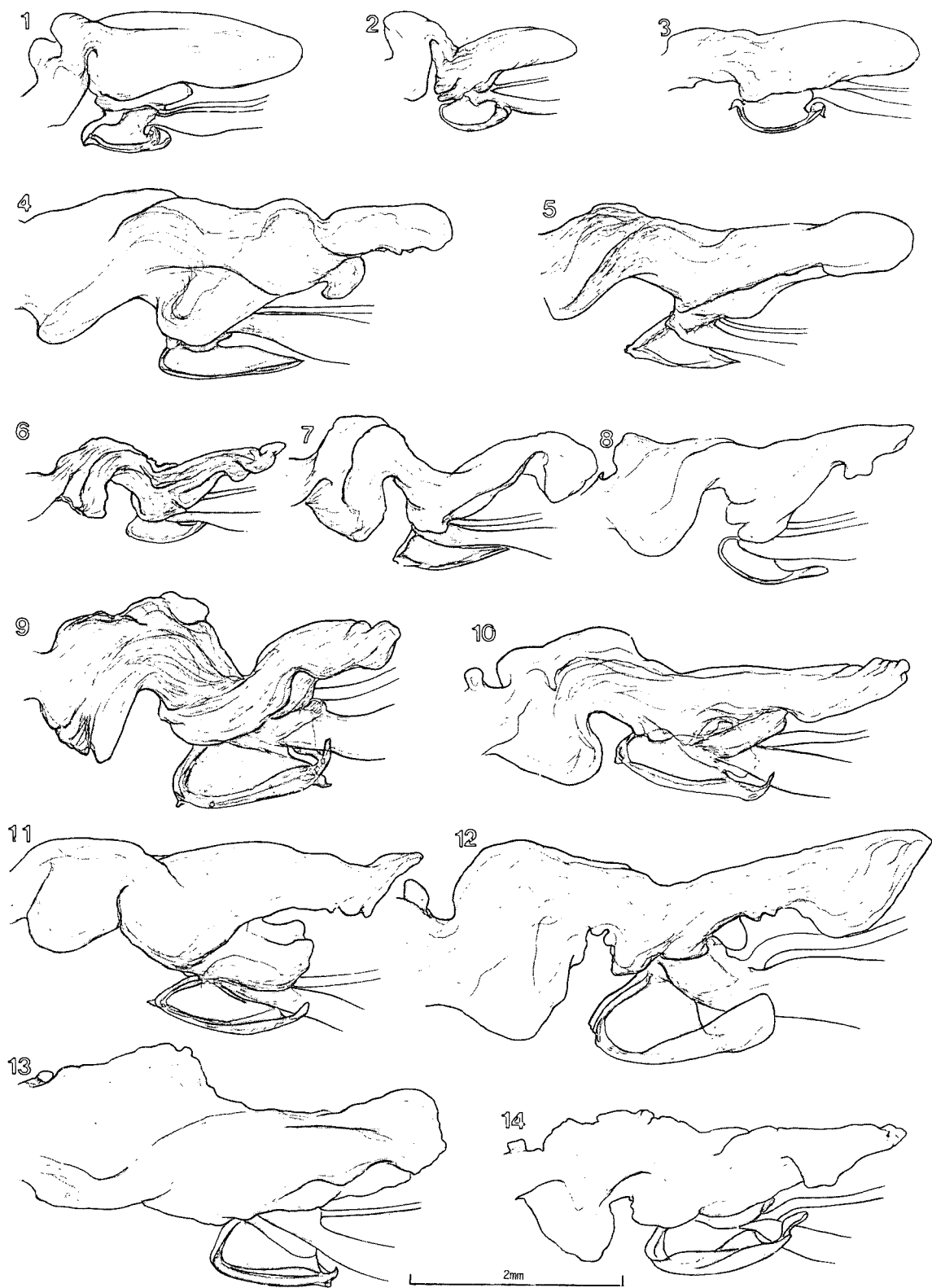


Plate LXXXIII.

Female genitalia of carabids in lateral view (6).

1. *Damaster (Acoptolabrus) seonhyeongae* sp. nov. (Huch'ang, PB, 15, VIII, 1936).
2. *Damaster (Koreacoptolabrus) constricticollis constricticollis* subgen. nov. (Yapuloni, Machuria, ?, VII, 1938).
3. *Damaster (Koreacoptolabrus) constricticollis constricticollis* subgen. nov. (Mt. T'aebaeksan, GW, 28, VI, 1976).
4. *Damaster (Koreacoptolabrus) constricticollis chiricola* subgen. et subsp. nov. (Mt. Chirisan, GN, 13, VII, 1981).
5. *Damaster (Koreacoptolabrus) mirabilissimus* subgen. nov. (Mt. T'aebaeksan, GW, 27, VI, 1976).
6. *Damaster (Koreacoptolabrus) mirabilissimus* subgen. nov. (Mt. Odaesan, GW, 5, VIII, 1971).
7. *Damaster (Koreacoptolabrus) mirabilissimus* subgen. nov. (Mt. Myōngjisan, GG, 6, VI, 1976).
8. *Damaster (Acoptolabrus) gehini munakatai* (Mt. Daisengendake, Hokkaido, Japan, 19-23, VIII, 1973).
9. *Damaster (Acoptolabrus) gehini gehini* (Jyozankei, Sapporo, Hokkaido, Japan, 24, VI, 1979).
10. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Kwanmobong, HB, 23, VIII, 1937).

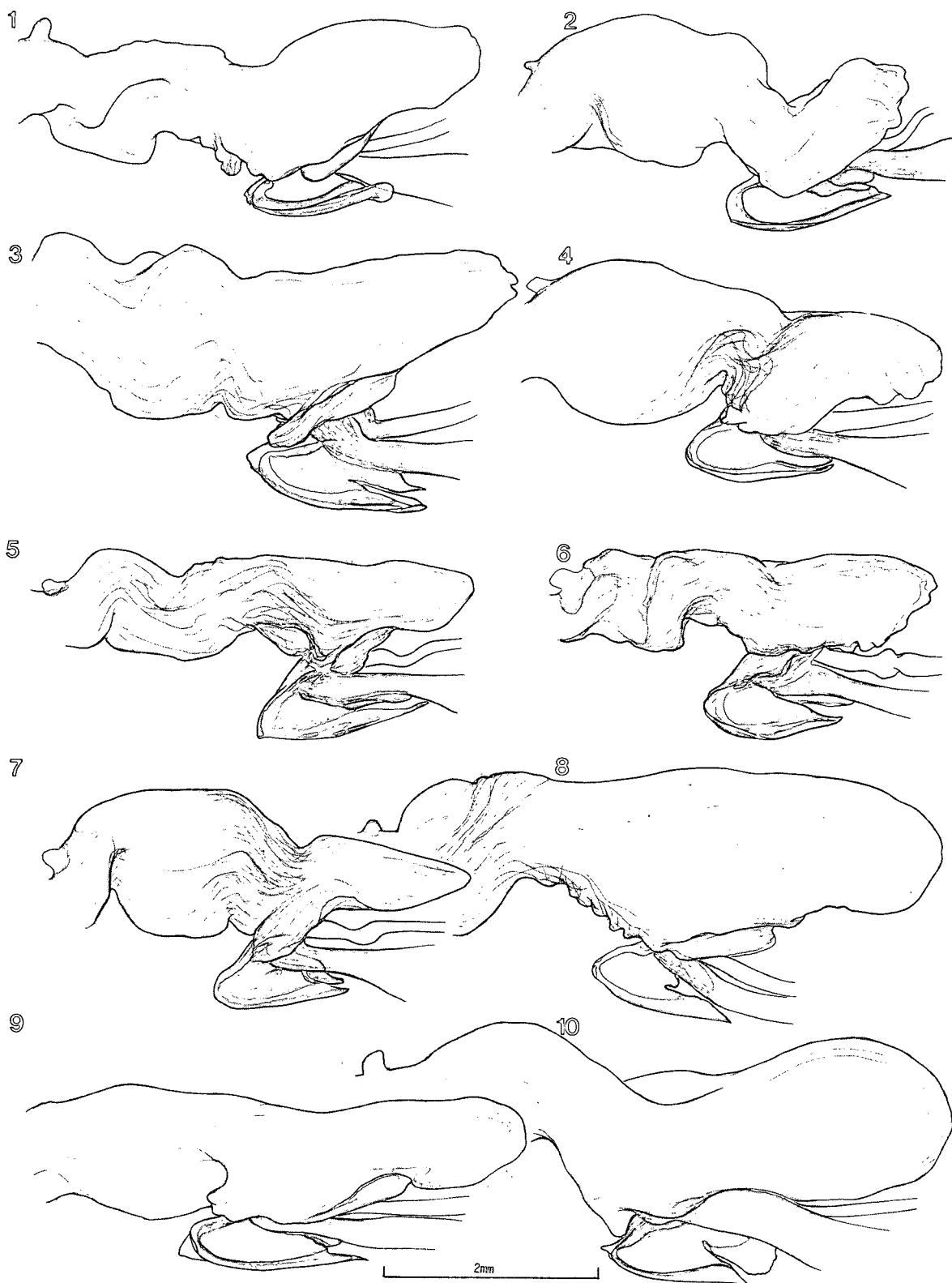


Plate LXXXIV.

Female genitalia of carabids in lateral view (7).

1. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Myohyangsan, PB, 26, VII, 1937).
2. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Sölaksan, GW, 13, VI, 1970).
3. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Tobongsan, GG, 11, VII, 1976).
4. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Yongmunsan, GG, 14, IX, 1980).
5. *Damaster (Coptolabrus) jankowskii kangwonensis* subsp. nov. (Mt. Odaesan, GW, 9, VIII, 1976).
6. *Damaster (Coptolabrus) jankowskii kangwonensis* subsp. nov. (Mt. T'aebaeksan, GW, 27, VI, 1976).
7. *Damaster (Coptolabrus) jankowskii kojensis* (Is. Kōjedo, GN, 22-31, VII, 1969).
8. *Damaster (Coptolabrus) jankowskii quelpartianus* (Mt. Hallasan, JJ, 22, VI, 1976).

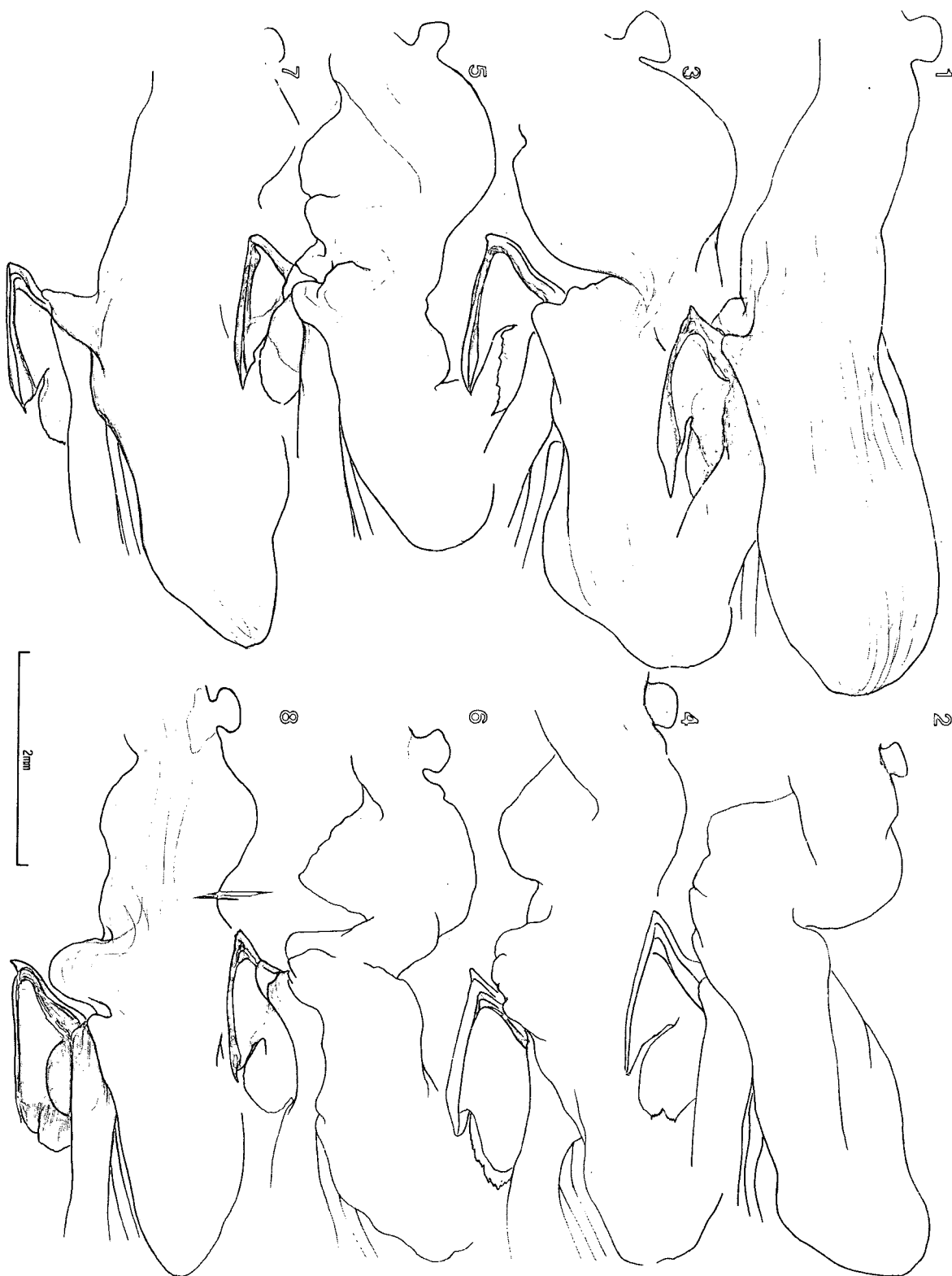
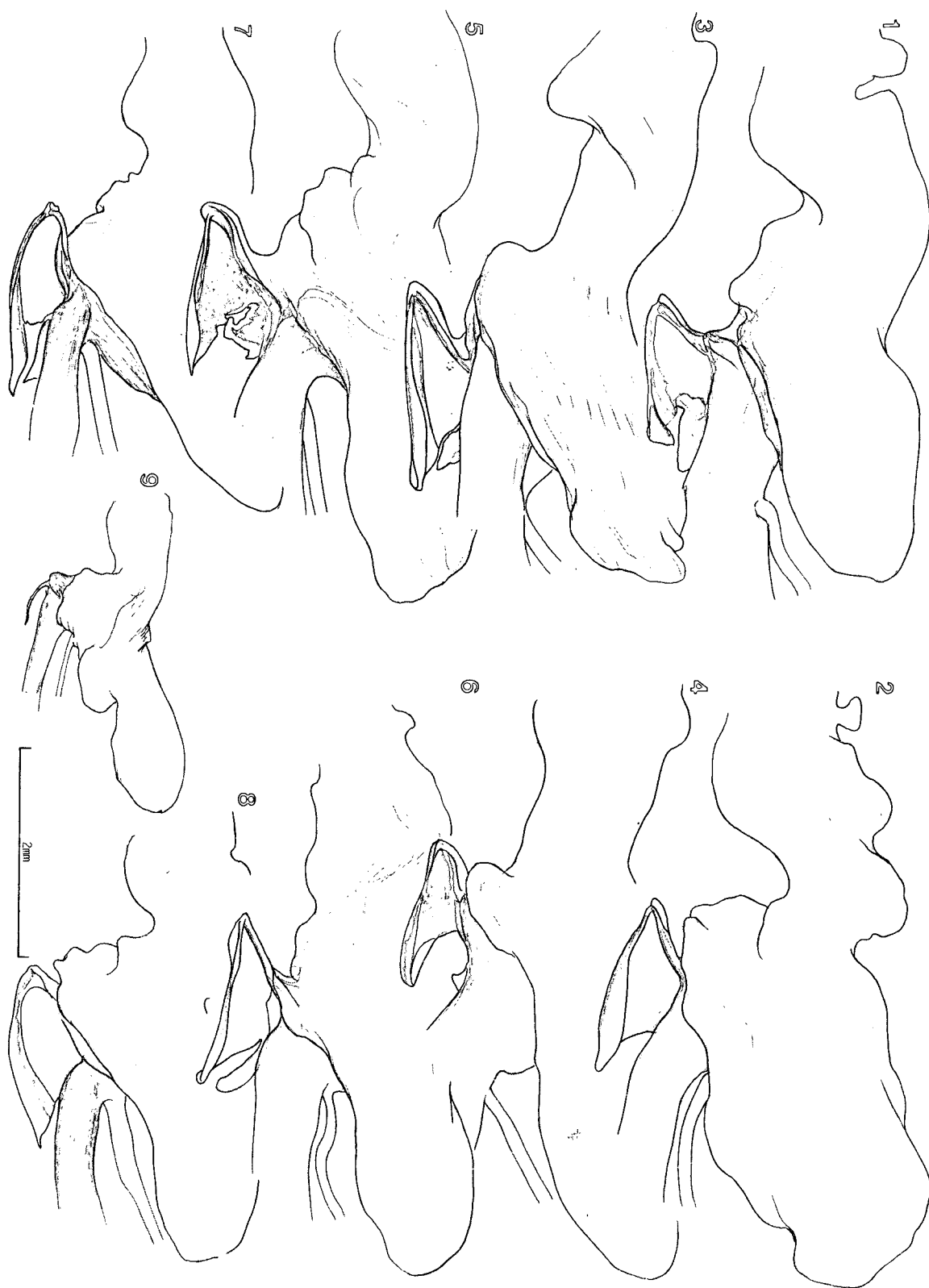


Plate LXXXV.

Female genitalia of carabids in lateral view (8).

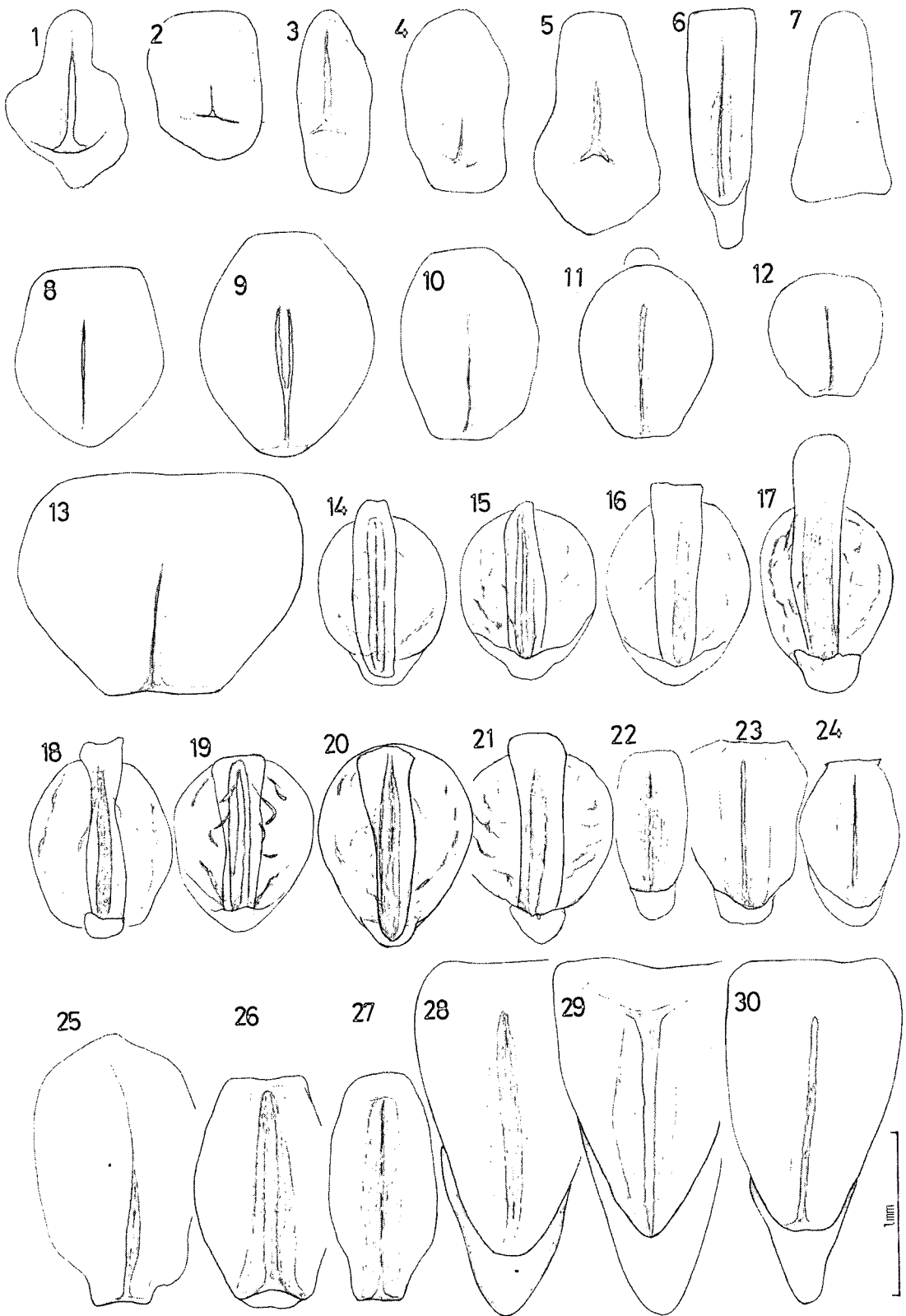
1. *Damaster (Coptolabrus) fruhstorferi* (Mt. Mitake, Is. Tsushima, Nagasaki Pref., Japan, 27, IV, 1972).
2. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Kwanmobong, HB, 18, VII, 1932).
3. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Sölaksan, GW, 22, VIII, 1969).
4. *Damaster (Coptolabrus) smaragdinus branickii* (Sanin Myōn, GN, 28, V, 1983).
5. *Damaster (Coptolabrus) smaragdinus hoenggandoensis* subsp. nov (Is. Hoenggando, JJ, 4, VIII, 1973).
6. *Damaster (Coptolabrus) nankotaizanus* (Taiwan, ?, VII, 1967).
7. *Damaster* (s. str.) *blaptoides rugipennis* (Asahigawa, Hokkaido, Japan, 8, VII, 1977).
8. *Damaster* (s. str.) *blaptoides capito* (Mt. Kinpokusen, Is. Sado, Niigata Pref., Honshu, Japan, 2-5, II, 1971).
9. *Cychrus morawitzi* (Mt. Apoidake, Hidaka, Hokkaido, Japan, 26, VIII, 1971).



# Plate LXXXVI.

## Female outer plates of vaginal apophyses of carabids (I).

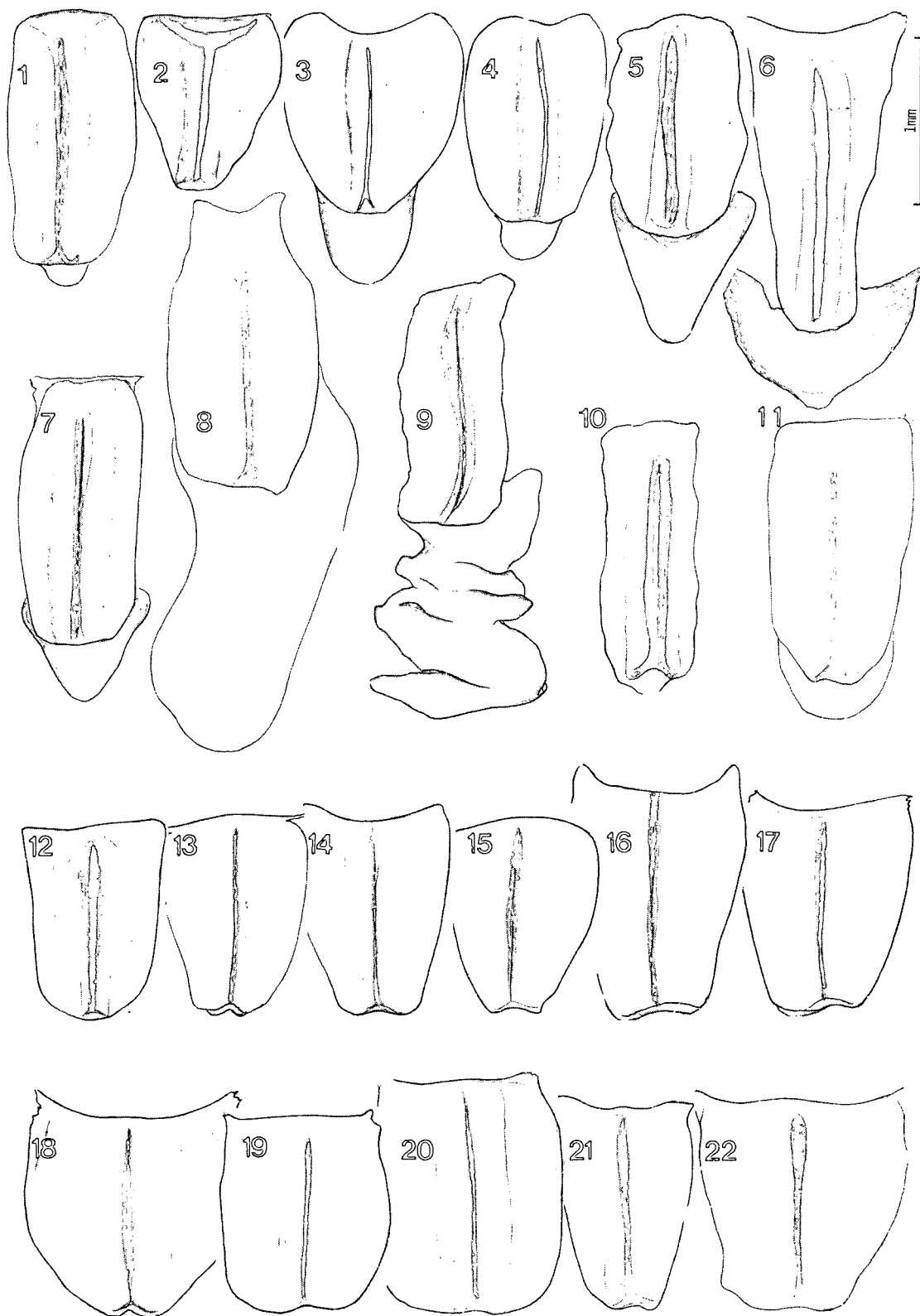
1. *Calosoma maximowiczii* (Mt. Sōgumgang, GW, 15, VIII, 1972).
2. *Calosoma maximowiczii* (Is. Tōkchōkto, GG, 11, VIII, 1970).
3. *Calosoma maximowiczii* (Mt. Hallasan, JJ, 8, VI, 1968).
4. *Calosoma maximowiczii* (Chiriuchi River, Oshima, Hokkaido, Japan, 31, VII, 1970).
5. *Calosoma inquisitor cyaneus* (Kwangnūng, GG, 24, V, 1970).
6. *Charmosta lugens* (Chōngjin, HB, ?, VII, 1930).
7. *Campalita chinense* (Seoul, GG, 28, V, 1971).
8. *Apotomopterus (Limnocarabus) clathratus maackii* (Nanam, HB, ?, VIII, 1929).
9. *Apotomopterus (Limnocarabus) clathratus maackii* (Harbin, Manchuria, ?, VIII, 1937).
10. *Apotomopterus (Limnocarabus) clathratus aquatilis* comb. nov. (Lake Jyusanko, Aomori Pref., Honshu, Japan, 4-6, IX, 1971).
11. *Apotomopterus (Euleptocarabus) porrecticollis porrecticollis* (Mt. Sotoyama, Nikko, Tochigi Pref., Honshu, Japan, 3, XI, 1969).
12. *Apotomopterus (Euleptocarabus) porrecticollis kansaiensis* (Kameoka City, Kyoto Pref., Honshu, Japan, 15, I, 1966).
13. *Apotomopterus* (s. str.) *sauteri* (Tengchih, Kaoshunsien, Taiwan, ?, VIII, 1975).
14. *Carabus* (s. str.) *granulatus granulatus* (Unterfranken, Kissingen, Germany, 1, III, 1976).
15. *Carabus* (s. str.) *granulatus granulatus* (Unterfranken, Kissingen, Germany, 19, XI, 1975).
16. *Carabus* (s. str.) *granulatus granulatus* (Moravia, Zidlochovice, Czechoslovakia, ?, VI, 1967).
17. *Carabus* (s. str.) *granulatus ussuriensis* (Mt. Kwanmobong, HB, 18, VII, 1932).
18. *Carabus* (s. str.) *granulatus ussuriensis* (Nanam, HB, ?, VI, 1930).
19. *Carabus* (s. str.) *granulatus telluris* (Fukushimagata, Tsukioka Pref., Honshu, Japan, 1, III, 1969).
20. *Carabus* (s. str.) *granulatus telluris* (Lake Jyusanko, Aomori Pref., Honshu, Japan, 21, VIII, 1970).
21. *Carabus* (s. str.) *granulatus yezoensis* (Kawayu, Kushiro, Hokkaido, Japan, 10, VII, 1969).
22. *Carabus (Eutelocarabus) arvensis germaniae* (Gr. Wald, Hoffenheim, Germany, ?, VI, 1974).
23. *Carabus (Eutelocarabus) conciliator faldermanni* (Nanam, HB, ?, V, 1928).
24. *Carabus (Eutelocarabus) conciliator hokkaidensis* (Mt. Apoidake, Hidaka, Hokkaido, Japan, 5-9, VII, 1970).
25. *Carabus (Isiocarabus) fiduciarius kirinicus* (Mt. Un'gilsan, GG, 22, V, 1983).
26. *Carabus (Isiocarabus) fiduciarius saishutoicus* (Mt. Hallasan, JJ, 1, VI, 1972).
27. *Carabus (Isiocarabus) fiduciarius saishutoicus* (Mt. Hallasan, JJ, 8, VI, 1972).
28. *Carabus (Ohomopterus) dehaanii dehaanii* (Mt. Hieizan, Kyoto Pref., Honshu, Japan, 15, I, 1967).
29. *Carabus (Ohomopterus) dehaanii tosanus* (Ashizurmisaki, Khochi Pref., Shikoku, Japan, 3, I, 1971).
30. *Carabus (Ohomopterus) dehaanii strenus* (Mt. Sobozan, Ohita Pref., Kyushu, Japan, 29, XII, 1969).



# Plate LXXXVII.

## Female outer plates of vaginal apophyses of carabids (2).

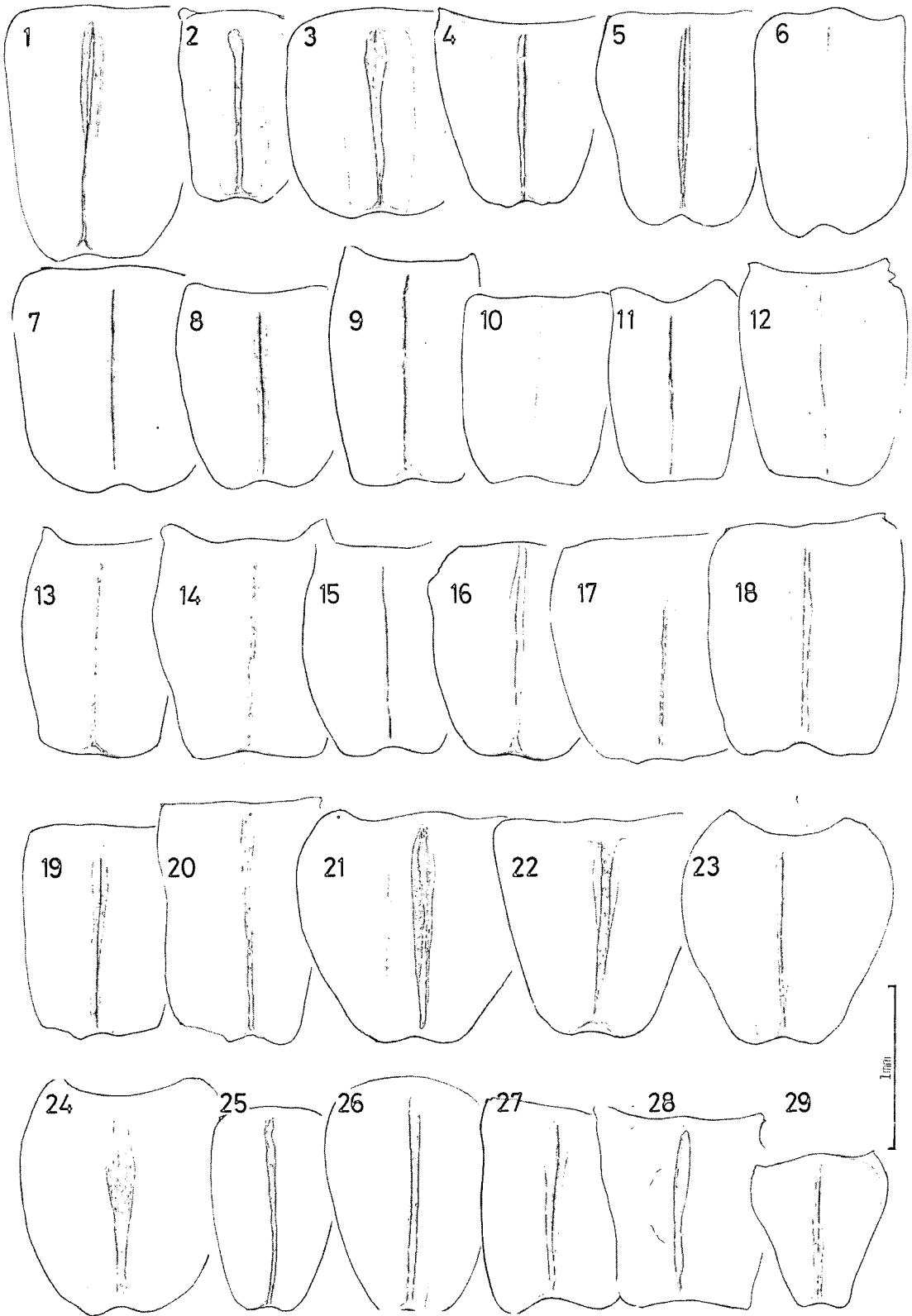
1. *Carabus (Ohomopterus) japonicus tsushimae* (Mt. Mitake, Is. Tsushima, Nagasaki Pref., Japan, 27, III, 1972).
2. *Carabus (Ohomopterus) lewisianus awakazusanus* (Mt. Tomisan, Chiba Pref., Honshu, Japan, 2, I, 1969).
3. *Carabus (Ohomopterus) albrechti freyi* (Ogi, Is. Sadogashima, Honshu, Japan, 21, XI, 1971).
4. *Carabus (Ohomopterus) yamato* (Mt. Kasuragisan, Nara Pref., Honshu, Japan, 30, V, -4, VI, 1975).
5. *Carabus (Ohomopterus) esakii* (Izu Peninsula, Shizuoka Pref., Honshu, Japan, 20, XII, 1973).
6. *Carabus (Ohomopterus) yaconinus yaconinus* (Mt. Hanatake, Shimane Pref., Honshu, Japan, 20, III, 1969).
7. *Carabus (Ohomopterus) yaconinus iwawakianus* (Mt. Iwawakisan, Osaka Pref., Honshu, Japan, 27-29 V, 1977).
8. *Carabus (Ohomopterus) insulicola insulicola* (Kizoro, Saitama Pref., Honshu, Japan, ?, II, 1968).
9. *Carabus (Ohomopterus) insulicola arrowianus* (Ohyama, Aichi Pref., Honshu, Japan, 3, III, 1968).
10. *Carabus (Ohomopterus) uenoi* (Mt. Katsuragisan, Nara Pref., Honshu, Japan, 30, V, -4, VI, 1975).
11. *Carabus (Eucarabus) ullrichi ullrichi* (Slov., Lipt., Osada, Czechoslovakia, ?, VIII, 1968).
12. *Carabus (Parhomopterus) sternbergi huchangensis* subsp. nov. (Huch'ang, PB, 26, VII, 1935).
- 13,14. *Carabus (Parhomopterus) sternbergi cartereti* (Mt. Sölaksan, GW, 27, VII, 1982).
15. *Carabus (Parhomopterus) sternbergi cartereti* (Mt. Odaesan, GW, 18, IX, 1982).
16. *Carabus (Parhomopterus) sternbergi cartereti* (Mt. Sogŭmgang, GW, 7, IX, 1980).
17. *Carabus (Parhomopterus) sternbergi cartereti* (Mt. T'aebaeksan, GW, 18, VI, 1974).
18. *Carabus (Parhomopterus) sternbergi cartereti* (Mt. T'aebaeksan, GW, 27, VI, 1976).
- 19,20. *Carabus (Parhomopterus) sternbergi sobaeksanensis* subsp. nov. (Mt. Sobaeksan, GB, 24, VII, 1977).
- 21,22. *Carabus (Parhomopterus) sternbergi palgongsanensis* subsp. nov. (Mt. P'algongsan, GB, 10, IX, 1982).



# Plate LXXXVIII.

## Female outer plates of vaginal apophyses of carabids (3).

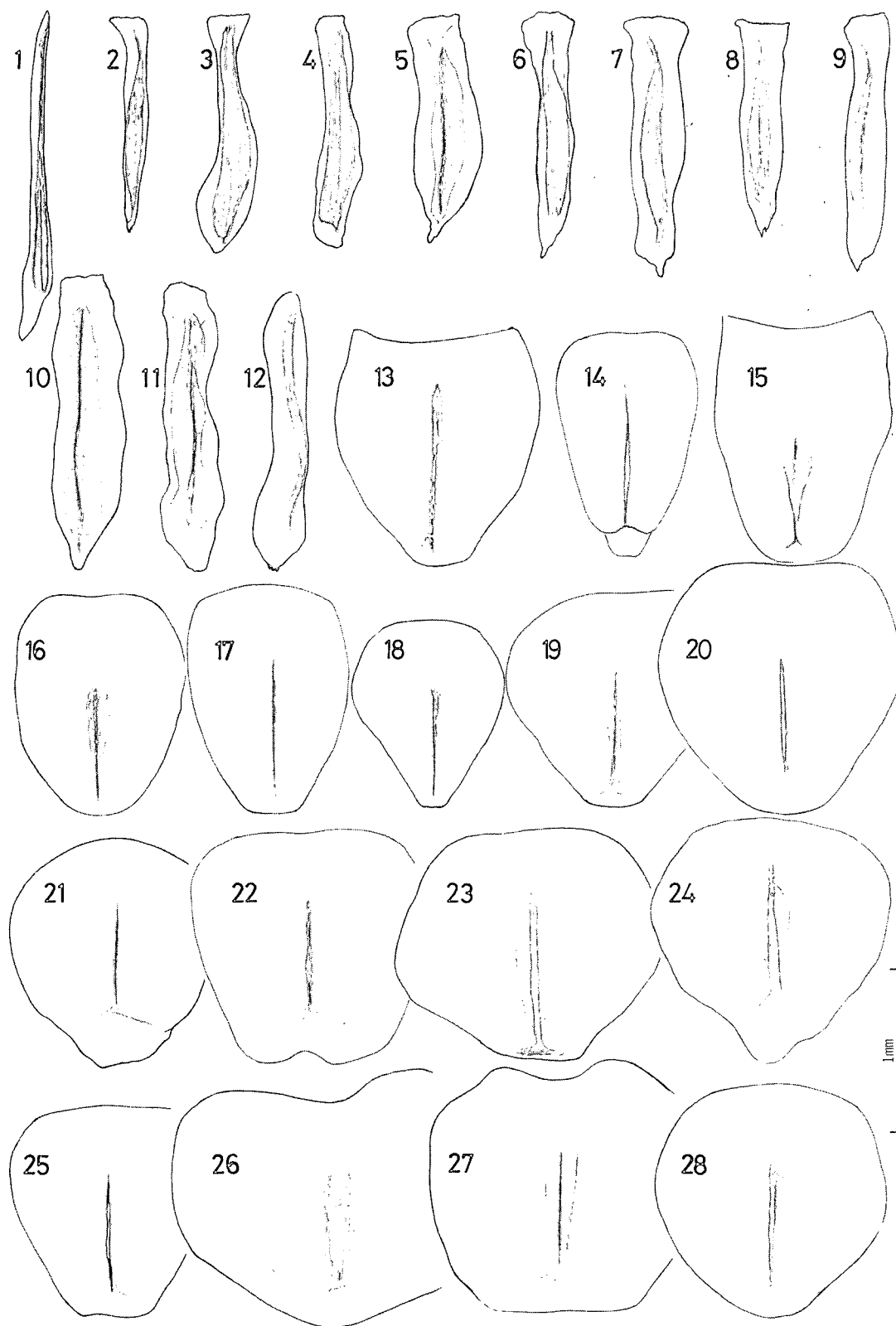
1. *Carabus (Parhomopterus) sternbergi tongdosanus* subsp. nov. (Mt. Sinbulsan, GN, 25, IX, 1982).
- 2,3. *Carabus (Parhomopterus) sternbergi chirisanensis* subsp. nov. (Mt. Chirisan, GN, 13, VII, 1981).
4. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Pangdaesan, GW, 27, VII, 1974).
5. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Pangdaesan, GW, 30, VII, 1974).
6. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Myŏngjisan, GG, 6, VI, 1976).
- 7,8. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Soyosan, GG, 5, VI, 1977).
9. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Aengmubong, GG, 26, VI, 1971).
10. *Carabus (Parhomopterus) sternbergi sternbergi* (Kwangnŭng, GG, 15, VIII, 1971).
11. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Ch'ŏnmasan, GG, 5, IV, 1969).
12. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Tobongsan, GG, 19, VIII, 1976).
13. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Pukhansan, GG, 11, VII, 1976).
14. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Tŏgamsan, GG, 6, IX, 1976).
15. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Yongmunsan, GG, 7, VI, 1977).
16. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Ch'iaksan, GW, 14, VI, 1976).
- 17,18. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Kwangdŏksan, CN, 11, VII, 1982).
- 19,20. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Kyeryongsan, CN, 14, IX, 1975).
- 21,22. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Songnisan, CB, 10, VI, 1977).
- 23,24. *Carabus (Parhomopterus) sternbergi honamensis* subsp. nov. (Mt. Chogyesan, JN, 5, VI, 1983).
- 25,26. *Carabus (Parhomopterus) sternbergi touzalini* (Mt. Hallasan, JJ, 7, VI, 1972).
27. *Carabus (Parhomopterus) sternbergi kojedoensis* subsp. nov. (Is. Kōjedo, 19, VI, 1970).
28. *Carabus (Parhomopterus) namhaedoensis* sp. nov. (Mt. Kŭmsan, in Is. Namhaedo, GN, 13, VI, 1977).
29. *Carabus (Orientocarabus) billbergi pumilus* subgen. nov. (Pujŏllyŏng, HN, ?, VIII, 1935).



# Plate LXXXIX.

## Female outer plates of vaginal apophyses of carabids (4).

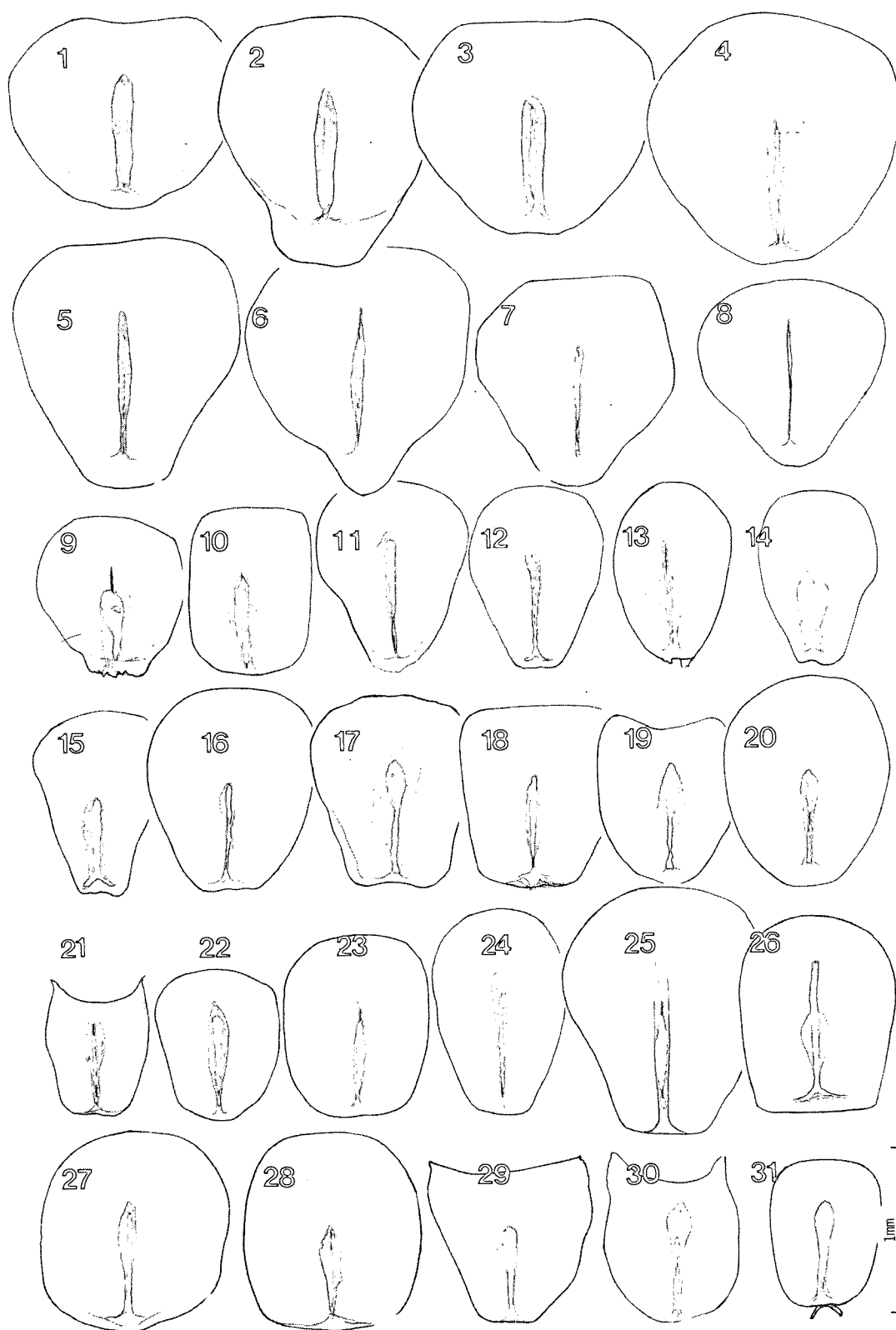
1. *Lipaster (Morphocarus) monilis consitus* (Muhlhouse, France, 20, IV, 1976).
2. *Lipaster (Leptinocarabus) wulffiussi ssangnamensis* subsp. nov. (Ssangnamdong, Huch'ang, PB, 14, VII, 1937).
- 3.4. *Lipaster (Leptinocarabus) wulffiussi opacipennis* (Mt. Sölsaksan, GW, 12, VIII, 1969).
5. *Lipaster (Leptinocarabus) wulffiussi opacipennis* (Mt. Odaesan, GW, 7, VIII, 1971).
6. *Lipaster (Leptinocarabus) wulffiussi opacipennis* (Mt. Odaesan, GW, 8, VIII, 1971).
7. *Lipaster (Leptinocarabus) wulffiussi opacipennis* (Mt. Pangdaesan, GW, 30, VII, 1974).
- 8.9. *Lipaster (Leptinocarabus) wulffiussi opacipennis* (Mt. Myöngjisan, GG, 6, VI, 1976).
- 10.11. *Lipaster (Leptinocarabus) wulffiussi opacipennis* (Mt. Tögamsan, GG, 6, IX, 1976).
12. *Lipaster (Leptinocarabus) wulffiussi alpinus* subsp. nov. (Mt. T'aebaeksan, GW, 27, VI, 1976).
13. *Leptocarabus* (s. str.) *procerulus procerulus* (Senjyogahara, Nikko, Tochigi Pref., Honshu, Japan, 5, XI, 1969).
14. *Leptocarabus (Aulonocarabus) kurilensis sugai* (Mt. Rebundake, Is. Rebunto, Hokkaido, Japan, 2, VIII, 1968).
15. *Leptocarabus (Aulonocarabus) canaliculatus careniger* (Mt. Kwanmobong, HB, 28, VII, 1934).
16. *Leptocarabus (Aulonocarabus) canaliculatus vojnitzi* (Hyesanjin, HN, ?, VII, 1937).
17. *Leptocarabus (Aulonocarabus) kwanmobongensis* sp. nov. (Mt. Kwanmobong, HB, 18, VII, 1932).
18. *Leptocarabus (Aulonocarabus) kwanmobongensis* sp. nov. (Mt. Kwanmobong, HB, 28, VII, 1934).
19. *Leptocarabus (Weolseocarabus) koreanus weolseoe* subgen. et subsp. nov. (Mt. Sölsaksan, GW, 9, VIII, 1969).
20. *Leptocarabus (Weolseocarabus) koreanus weolseoe* subgen. et subsp. nov. (Mt. Kümangsan, GW, 2, VIII, 1932).
21. *Leptocarabus (Weolseocarabus) koreanus koreanus* subgen. nov. (Mt. Kach'ilbong, GW, 24, VII, 1981).
22. *Leptocarabus (Weolseocarabus) koreanus koreanus* subgen. nov. (Mt. Odaesan, GW, 9, VIII, 1976).
23. *Leptocarabus (Weolseocarabus) koreanus koreanus* subgen. nov. (Mt. Sogümgang, GW, 7, IX, 1980).
24. *Leptocarabus (Weolseocarabus) koreanus koreanus* subgen. nov. (Mt. Tut'asan, GW, 20, VII, 1979).
25. *Leptocarabus (Weolseocarabus) koreanus koreanus* subgen. nov. (Mt. T'aebaeksan, GW, 27, VI, 1976).
26. *Leptocarabus (Weolseocarabus) koreanus koreanus* subgen. nov. (Konjiam, GG, 1, VIII, 1976).
27. *Leptocarabus (Weolseocarabus) koreanus koreanus* subgen. nov. (Konjiam, GG, 23, IX, 1976).
28. *Leptocarabus (Weolseocarabus) koreanus koreanus* subgen. nov. (Mt. Hwanghaksan, GB, 29, IX, 1982).



# Plate XC.

## Female outer plates of vaginal apophyses of carabids (5).

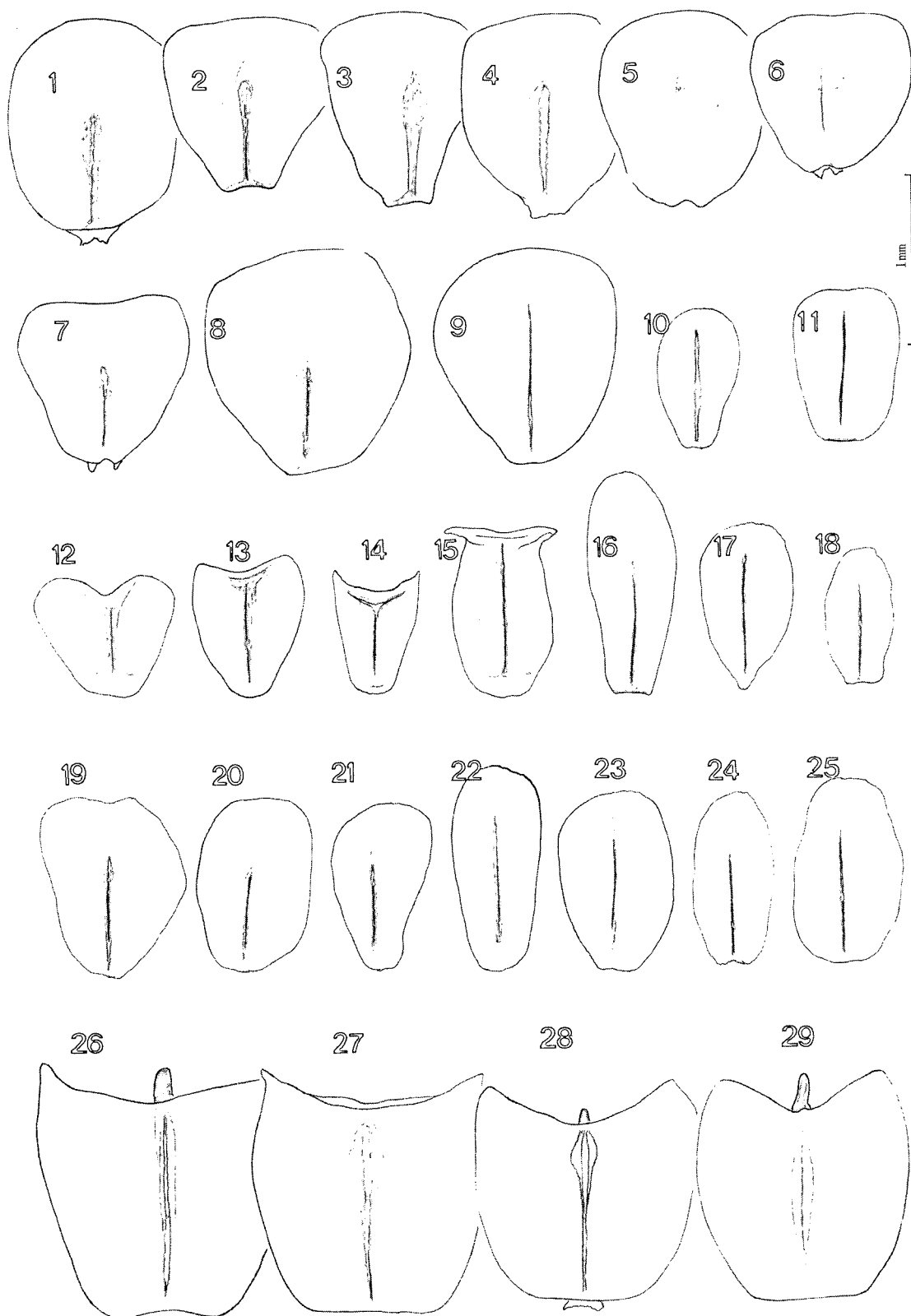
1. *Leptocarabus (Weolseocarabus) koreanus koreanus* subgen. nov. (Kangch'on, GW, 31, V, 1975).
2. *Leptocarabus (Weolseocarabus) koreanus koreanus* subgen. nov. (Mt. P'algongsan, GB, 10, IX, 1982).
- 3,4. *Leptocarabus (Weolseocarabus) koreanus koreanus* subgen. nov. (Mt. T'ohamsan, GB, 22, IX, 1982).
5. *Leptocarabus (Weolseocarabus) koreanus koreanus* subgen. nov. (Mt. Kayasan, GN, 12, IX, 1982).
6. *Leptocarabus (Weolseocarabus) koreanus koreanus* subgen. nov. (Mt. Kŭmjŏngsan, GN, 21, IX, 1982).
7. *Leptocarabus (Weolseocarabus) koreanus minor* subgen. et subsp. nov. (Mt. Sobaeksan, GB, 23, VII, 1977).
8. *Leptocarabus (Weolseocarabus) koreanus minor* subgen. et subsp. nov. (Mt. Sobaeksan, GB, 24, VII, 1977).
9. *Leptocarabus (Adelocarabus) semiopacus* (Mt. Sŏlaksan, GW, 13, VIII, 1969).
10. *Leptocarabus (Adelocarabus) semiopacus* (Mt. Sobaeksan, GB, 23, VII, 1977).
- 11,12. *Leptocarabus (Adelocarabus) semiopacus* (Mt. Kyeryongsan, CN, 14, IX, 1975).
13. *Leptocarabus (Adelocarabus) semiopacus* (Mt. Hwanghaksan, GB, 29, IX, 1982).
- 14,15. *Leptocarabus (Adelocarabus) semiopacus* (Mt. P'alongsan, GB, 10, IX, 1982).
16. *Leptocarabus (Adelocarabus) semiopacus* (Mt. Tŏgyusan, JB, 22, VIII, 1977).
17. *Leptocarabus (Adelocarabus) semiopacus* (Mt. Chirisan, GN, 12, VI, 1983).
18. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Kwanmobong, HB, 18, VII, 1932).
19. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Sŏlaksan, GW, 30, VII, 1969).
20. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Sŏlaksan, GW, 13, VIII, 1969).
21. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Odaesan, GW, 7, VIII, 1971).
22. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Odaesan, GW, 8, VIII, 1971).
23. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Pangdaesan, GW, 28, VII, 1974).
- 24,25. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Myŏngjisan, GG, 7, VI, 1976).
26. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Pukhansan, GG, 12, VII, 1976).
- 27,28. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Tŏgamsan, GG, 6, IX, 1976).
29. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. T'aebaeksan, GW, 27, VI, 1976).
30. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Sobaeksan, GB, 24, VII, 1977).
31. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Kyeryongsan, CN, 14, IX, 1975).



# Plate XCI.

## Female outer plates of vaginal apophyses of carabids (6).

1. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Hwanghaksan, GB, 29, IX, 1982).
2. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. P'algongsan, GB, 3, IX, 1982).
3. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. P'algongsan, GB, 10, IX, 1982).
4. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Kayasan, GN, 12, IX, 1982).
5. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Chogyesan, JN, 5, VI, 1983).
- 6,7. *Leptocarabus (Adelocarabus) seishinensis seunglaki* subsp. nov. (Mt. Chirisan, GN, 6, VI, 1983).
8. *Leptocarabus (Adelocarabus) arboreus arboreus* (Aizankei, Mt. Daisetsuzan, Hokkaido, Japan, 12-15, VII, 1970).
9. *Leptocarabus (Adelocarabus) exilis babai* (Mt. Tenguharayama, Nagano Pref., Honshu, Japan, 15, IX, 1969).
10. *Leptocarabus (Astenocarabus) opaculus kurosawai* (Aizankei, Mt. Daisetsuzan, Hokkaido, Japan, 12-15, VII, 1970).
11. *Leptocarabus (Pentacarabus) harmandi okutamaensis* (Mt. Mitsutogeyama, Yamanashi Pref., Honshu, Japan, 2, VI, 1971).
12. *Hemicarabus* (s. str.) *tuberculosis* (Kwangnŭng, GG, 3, VII, 1967).
13. *Hemicarabus* (s. str.) *tuberculosis* (Mt. Hallasan, JJ, 29, VII, 1978).
14. *Hemicarabus* (s. str.) *macleayi coreensis* (Mt. Turyusan, HB, 21, VII, 1936).
15. *Hemicarabus (Homoeocarabus) maeander quelpartensis* subsp. nov. (Mt. Hallasan, JJ, 20, VI, 1968).
16. *Scambocarabus kruberi kruberi* (Mt. Kwanmobong, HB, 18, VII, 1932).
17. *Tomocarabus fraterculus affinis* subsp. nov. (Mt. Sŏlaksan, GW, 9, VI, 1971).
18. *Tomocarabus fraterculus affinis* subsp. nov. (Mt. Odaesan, GW, 18, IX, 1982).
- 19,20. *Tomocarabus fraterculus affinis* subsp. nov. (Mt. Myŏngjisan, GG, 27, V, 1978).
21. *Tomocarabus fraterculus assimilis* subsp. nov. (Mt. T'aebaeksan, GW, 27, VI, 1976).
22. *Tomocarabus fraterculus assimilis* subsp. nov. (Mt. P'algongsan, GB, 18, IV, 1983).
23. *Tomocarabus fraterculus assimilis* subsp. nov. (Mt. P'algongsan, GB, 24, V, 1983).
- 24,25. *Tomocarabus fraterculus yeongsiki* subsp. nov. (Mt. Chirisan, GN, 6, VI, 1983).
26. *Megodontus* (s. str.) *purpurascens crenatocostatus* (Bruxelle, Belgium, ?, VI, 1975).
27. *Megodontus* (s. str.) *violaceus candisatus* (Bayriseher Wald, Buhenau, Germany, 14, IX, 1975).
28. *Megodontus (Ainocarabus) kolbei kolbei* (Mt. Apoidake, Hidaka, Hokkaido, Japan, 26, VIII, 1971).
29. *Megodontus (Ainocarabus) kolbei kosugei* (Mt. Shakotandake, Shiribeshi, Hokkaido, Japan, 18-24, VIII, 1972).



## Plate XCII.

### Female outer plates of vaginal apophyses of carabids (7).

1. *Megodontus (Ainocarabus) kolbei munakataorum* (Mt. Daisengen, Oshima, Hokkaido, Japan, 1, IX, 1971).
2. *Procrustes coriaceus* (Munnes Tadter Wald, bei Kissingen, Unterfranken, Germany, 10, IX, 1976).
3. *Megodontus (Nabicarabus) vietinghoffi borealis* subgen. et subsp. nov. (Mt. Kwanmobong, HB, 4, VIII, 1933).
4. *Megodontus (Nabicarabus) vietinghoffi caesareus* subgen. nov. (Khyngan, Manchuria, 20, VII, 1933).
5. *Damaster (Acoptolabrus) seonhyeongae* sp. nov. (Huch'ang, PB, 15, VIII, 1936).
6. *Damaster (Koreacoptolabrus) constricticollis constricticollis* subgen. nov. (Yapuloni, Manchuria, ?, VII, 1938).
7. *Damaster (Koreacoptolabrus) constricticollis constricticollis* subgen. nov. (Huch'ang, PB, 15, VIII, 1936).
8. *Damaster (Koreacoptolabrus) constricticollis constricticollis* subgen. nov. (Kunnaedong, Huch'ang, PB, 30, VI, 1937).
- 9,10. *Damaster (Koreacoptolabrus) constricticollis constricticollis* subgen. nov. (Mt. T'aebaeksan, GW, 28, VI, 1976).
11. *Damaster (Koreacoptolabrus) constricticollis chiricola* subgen. et subsp. nov. (Mt. Chirisan, GN, 13, VII, 1981).
12. *Damaster (Koreacoptolabrus) constricticollis chiricola* subgen. et subsp. nov. (Mt. Chirisan, GN, 6, VI, 1983).
13. *Damaster (Koreacoptolabrus) mirabilissimus* subgen. nov. (Mt. T'aebaeksan, GW, 27, VI, 1976).
14. *Damaster (Koreacoptolabrus) mirabilissimus* subgen. nov. (Mt. Odaesan, GW, 5, VIII, 1971).
15. *Damaster (Koreacoptolabrus) mirabilissimus* subgen. nov. (Mt. Myŏngjisan, GG, 6, VI, 1976).
16. *Damaster (Acoptolabrus) gehini gehini* (Jyozankei, Sapporo, Hokkaido, Japan, 24, VI, 1979).
17. *Damaster (Acoptolabrus) gehini radiatocostatus* (Oiwake Pass, Hidaka, Hokkaido, Japan, 27-30, VIII, 1972).
18. *Damaster (Acoptolabrus) gehini sapporensis* (Mt. Apoidake, Hidaka, Hokkaido, Japan, 5-8, VIII, 1970).
19. *Damaster (Acoptolabrus) gehini munakatai* (Mt. Daisengendake, Hokkaido, Japan, 19-23, VIII, 1973).
20. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Kwanmobong, HB, 23, VIII, 1937).

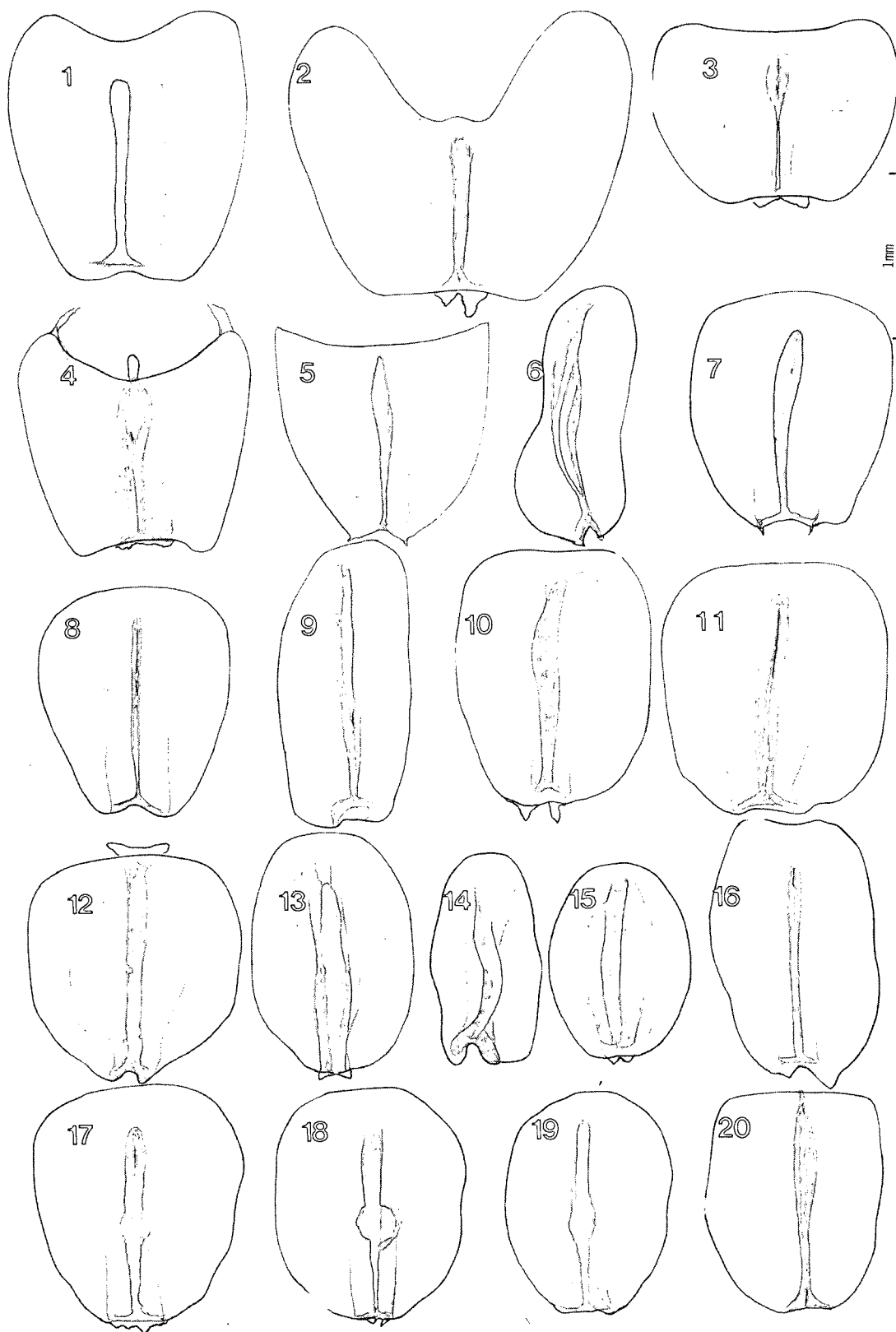
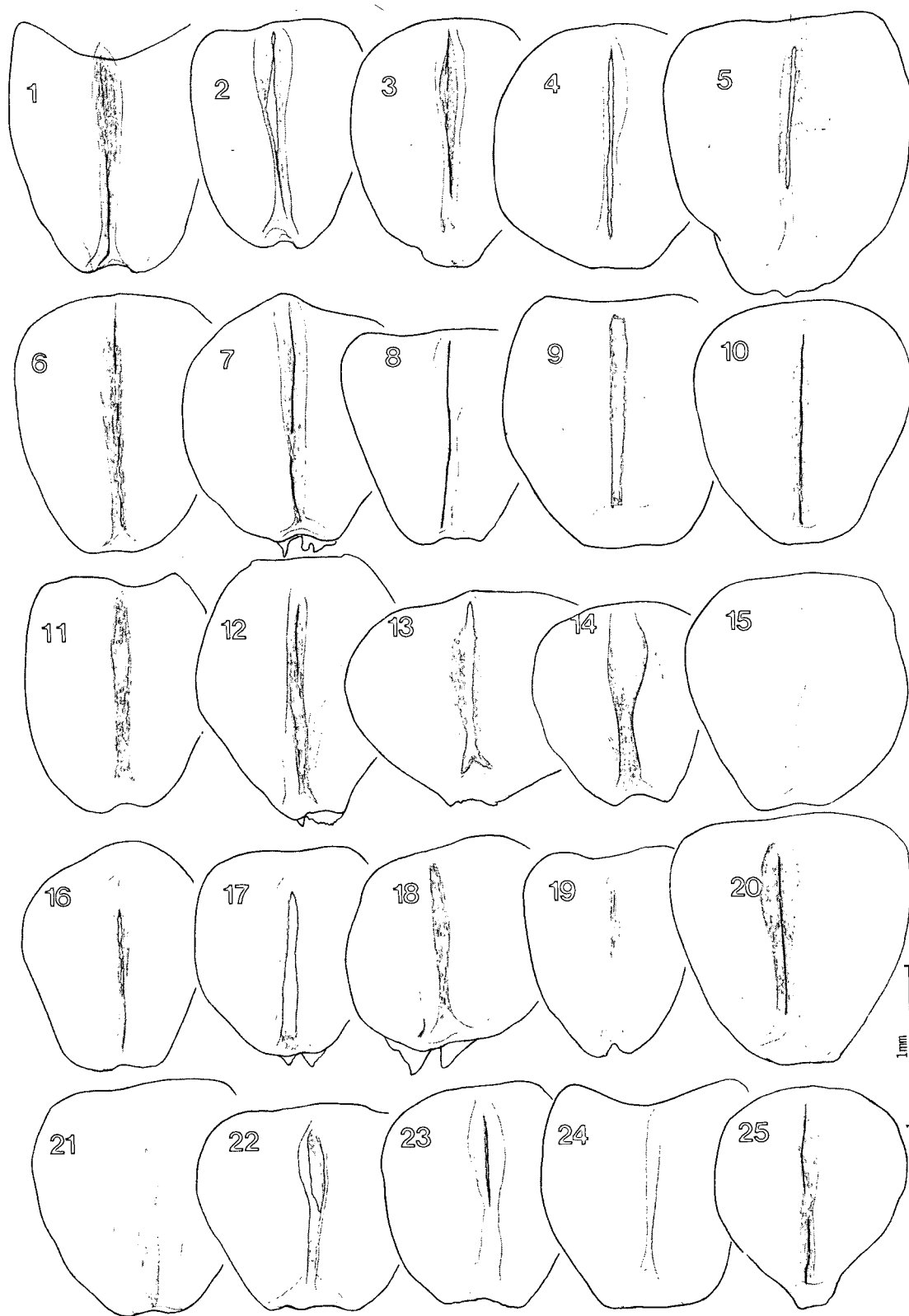


Plate XCIII.

Female outer plates of vaginal apophyses of carabids (8).

1. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Myohyangsan, PB, 26, VII, 1937).
2. *Damaster (Coptolabrus) jankowskii jankowskii* (Kapsan, HN, ?, VII, 1926).
3. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Sölaksan, GW, 13, VI, 1970).
- 4,5. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Sölaksan, GW, 23, VII, 1970).
6. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Wangbangsan, GW, 6, VIII, 1976).
7. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Myöngjisan, GG, 19, VI, 1976).
8. *Damaster (Coptolabrus) jankowskii jankowskii* (Kwangnūng, GG, 15, VIII, 1971).
9. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Aengmubong, GG, 27, VI, 1971).
10. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Pukhansan, GG, 11, VII, 1976).
11. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Tobongsan, GG, 19, VIII, 1976).
12. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Tögramsan, GG, 6, IX, 1976).
13. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Yongmunsan, GG, 14, IX, 1980).
14. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Ch'iaksan, GW, 25, VIII, 1977).
15. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Sobaeksan, GB, 24, VII, 1977).
16. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Kyeryongsan, CN, 14, IX, 1975).
17. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Songnisan, CB, 10, VI, 1977).
18. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. P'algongsan, GB, 10, IX, 1982).
19. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. T'ohamsan, GB, 22, IX, 1982).
- 20,21. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Chogyesan, JN, 5, VI, 1983).
- 22,23. *Damaster (Coptolabrus) jankowskii kangwonensis* subsp. nov. (Mt. Odaesan, GW, 9, VIII, 1976).
24. *Damaster (Coptolabrus) jankowskii kangwonensis* subsp. nov. (Mt. T'aebaeksan, GW, 27, VI, 1976).
25. *Damaster (Coptolabrus) jankowskii fusanus* (Pusan, GN, 3, VI, 1977).



## Plate XCIV.

### Female outer plates of vaginal apophyses of carabids(9).

1. *Damaster (Coptolabrus) jankowskii fusanus* (Pusan, GN, ?, VI, 1977).
- 2,3. *Damaster (Coptolabrus) jankowskii kojensis* (Is. Kōjedo, GN, 22-31, VII, 1969).
- 4,5. *Damaster (Coptolabrus) jankowskii kojensis* (Mt. Kūmsan, in Is. Namhaedo, GN, 13, VI, 1977).
6. *Damaster (Coptolabrus) jankowskii quelpartianus* (Mt. Hallasan, JJ, 22, VI, 1976).
7. *Damaster (Coptolabrus) jankowskii quelpartianus* (Mt. Hallasan JJ, 29, VII, 1978).
8. *Damaster (Coptolabrus) jankowskii quelpartianus* (Chungmun, JJ, 20, VII, 1978).
9. *Damaster (Coptolabrus) fruhstorferi* (Mt. Mitake, Is, Tsushima, Nagasaki Pref., Japan, 27, IV, 1972).
10. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Kwanmobong, HB, 18, VII, 1932).
11. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Sōlaksan, GW, 22, VIII, 1969).
12. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Sōlaksan, GW, 17, IX, 1973).
- 13,14. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Odaesan, GW, 9, VIII, 1976).
15. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Pangdaesan, GW, 30, VII, 1974).
16. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Sobaeksan, GB, 6, VIII, 1980).
- 17,18,19. *Damaster (Coptolabrus) smaragdinus branickii* (Kwangnūng, GG, 25, VIII, 1968).
20. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Aengmubong, GG, 28, VIII, 1971).
21. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Tobongsan, GG, 19, VIII, 1976).

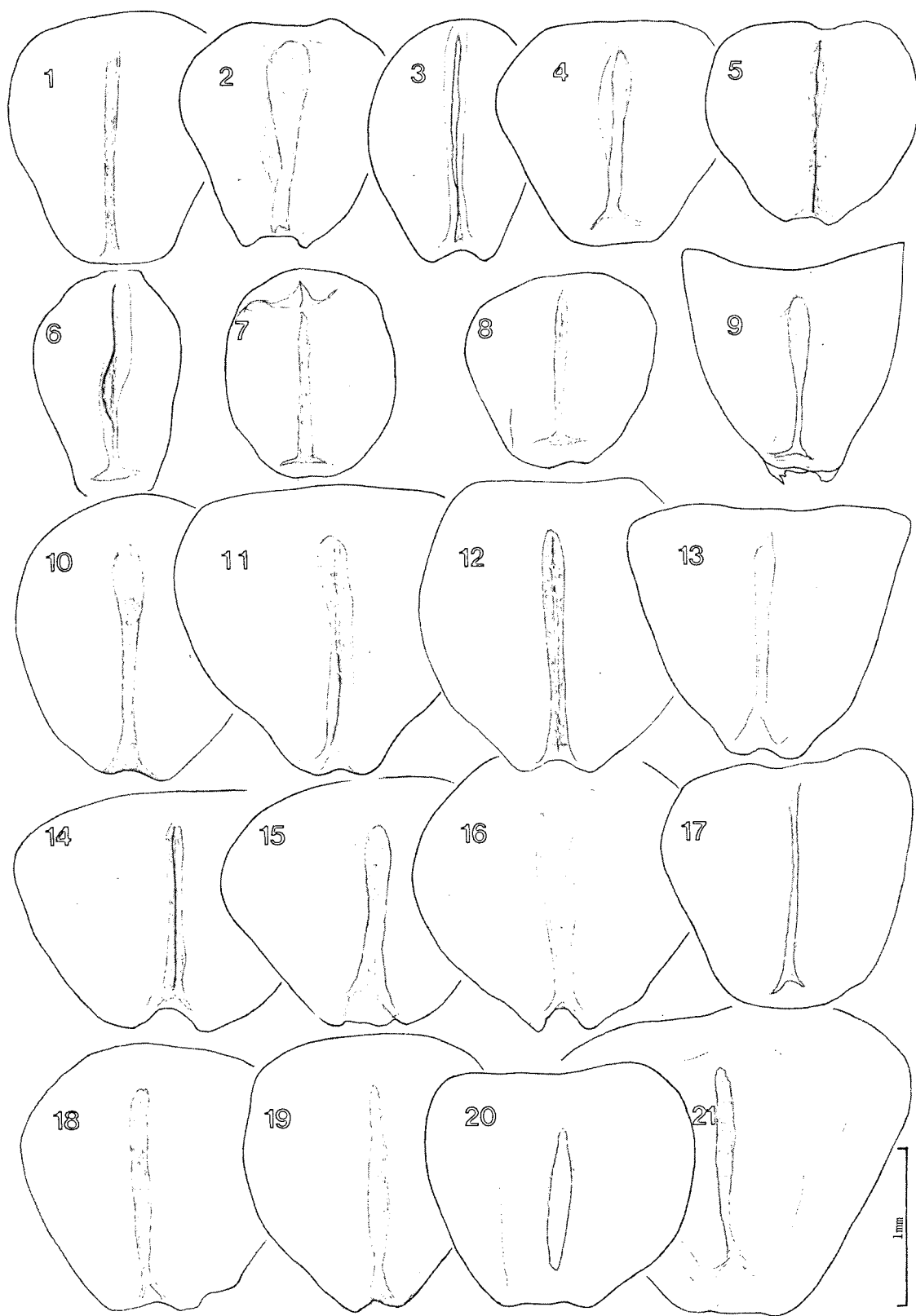
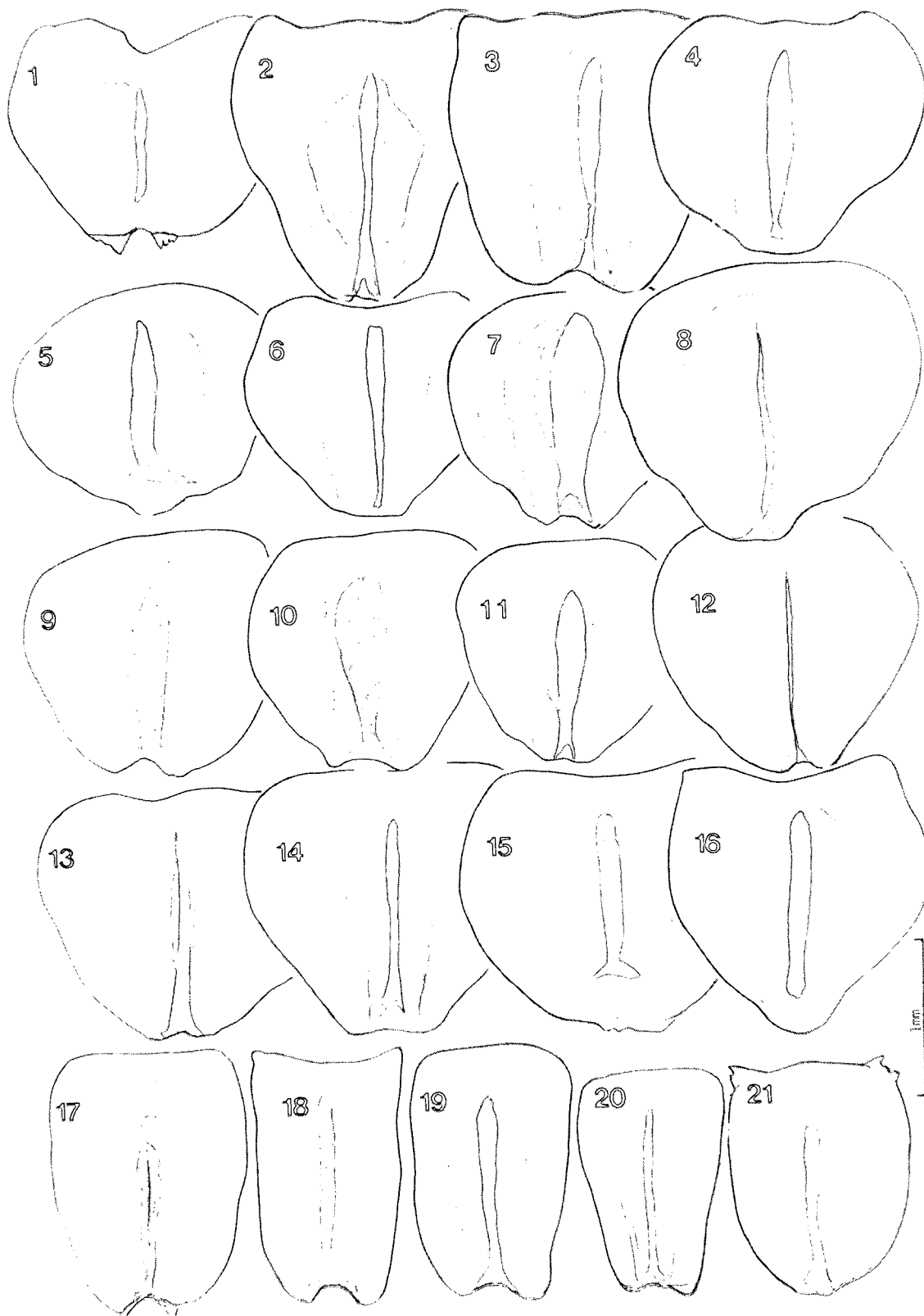


Plate XCV.

Female outer plates of vaginal apophyses of carabids (10).

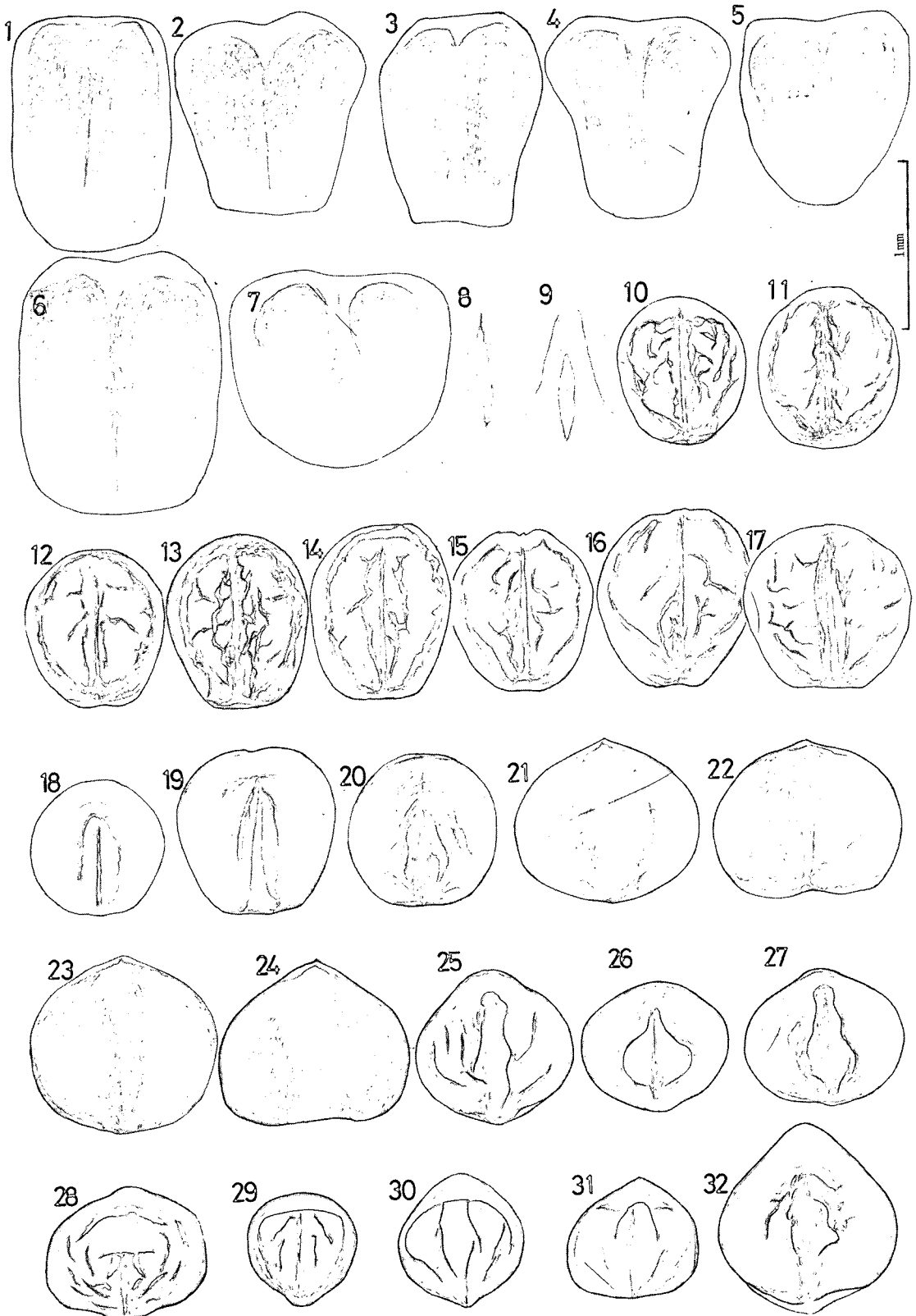
1. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Wangbangsan, GG, 2, VIII, 1977).
- 2,3. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Kyeryongsan, CN, 14, IX, 1975).
- 4,5. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. P'algongsan, GB, 24, V, 1983).
6. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. T'ohamsan, GB, 22, IX, 1982).
- 7,8. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Yŏngch'wishan, GN, 2, VI, 1983).
9. *Damaster (Coptolabrus) smaragdinus branickii* (Sanin Myŏn, GN, 28, V, 1983).
10. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Muhaksan, GN, 29, V, 1983).
- 11,12. *Damaster (Coptolabrus) smaragdinus branickii* (Is. Kŏjedo, GN, 16-20, VII, 1970).
13. *Damaster (Coptolabrus) smaragdinus sangjaei* subsp. nov. (Mt. Chirisan, GN, 6, VI, 1983).
14. *Damaster (Coptolabrus) smaragdinus hoenggandoensis* subsp. nov. (Is. Hoenggando, JJ, 4, VIII, 1970).
15. *Damaster (Coptolabrus) smaragdinus monilifer* (Mt. Hallasan, JJ, 29, VII, 1978).
16. *Damaster (Coptolabrus) nankotaizanus* (Taiwan, ?, VII, 1967).
17. *Damaster* (s. str.) *blaptoides rugipennis* (Asahigawa, Hokkaido, Japan, 8, VII, 1977).
18. *Damaster* (s. str.) *blaptoides capito* (Mt. Kinpŏkusan, Is. Sadŏ, Niigata Pref., Honshu Japan, 2-5, III, 1971).
19. *Damaster* (s. str.) *blaptoides fortunei* (Is. Awashima, Niigata Pref., Honshu, Japan, 31, III, 1970).
20. *Damaster* (s. str.) *blaptoides blaptoides* (Yamanomachi, Kobe Pref., Honshu, Japan, 10, III, 1968).
21. *Damaster* (s. str.) *blaptoides montanus* (Mt. Adatarasan, Fukushima Pref., Honshu, Japan, 8, IV, 1970).



# Plate XCVI.

## Female inner plates of vaginal apophyses of carabids (1).

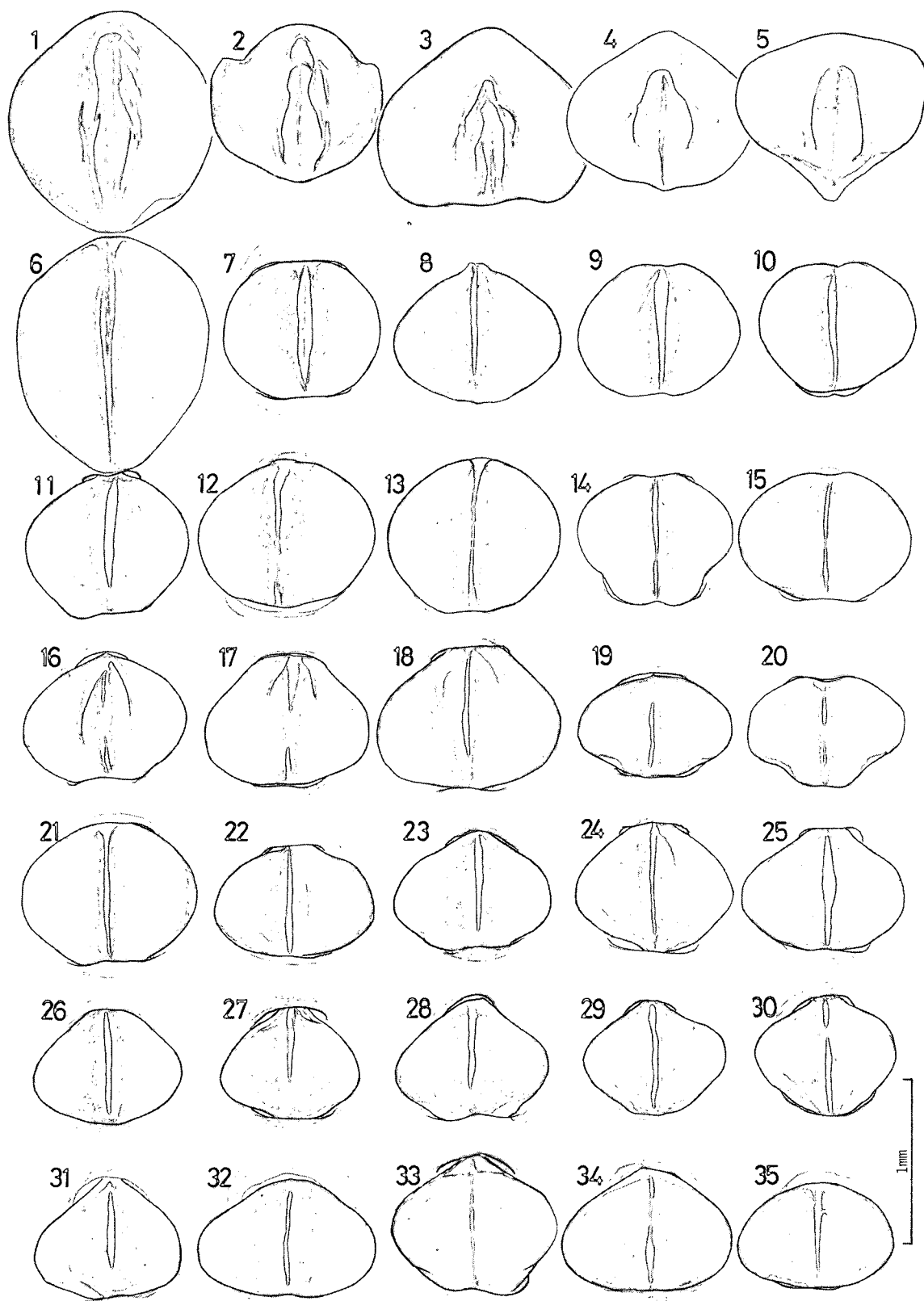
1. *Calosoma maximowicz* (Mt. Sogūmgang, GW, 15, VIII 1972).
2. *Calosoma maximowicz* (Is. Tōkchōkto, GG, 11, VIII, 1970).
3. *Calosoma maximowicz* (Mt. Hallasan, JJ, 8, VI, 1968).
4. *Calosoma maximowicz* (Chiriuchi River, Oshima, Hokkaido, Japan, 31, VII, 1970).
5. *Calosoma inguisitor cyanescens* (Kwangnūng, GG, 24, V, 1970).
6. *Charmosta lugens* (Ch'ōngjin, HB, ?, VII, 1930).
7. *Campalita chinense* (Seoul, GG, 28, V, 1971).
8. *Apotomopterus (Euleptocarabus) porrecticollis kansaiensis* (Kameoka City, Kyoto Pref., Honshu, Japan, 15, I, 1966).
9. *Apotomopterus* (s. str.) *sauteri* (Tengchih, Kaoshunsien, Taiwan, ?, VIII, 1975).
10. *Carabus* (s. str.) *granulatus granulatus* (Unterfranken, Kissingen, Germany, 1, III, 1976).
11. *Carabus* (s. str.) *granulatus granulatus* (Unterfranken, Kissingen, Germany, 19, XI, 1975).
12. *Carabus* (s. str.) *granulatus granulatus* (Moravia, Zidlochovice, Czechoslovakia, ?, VI, 1967).
13. *Carabus* (s. str.) *granulatus ussuriensis* (Mt. Kwanmobong, HB, 18, VII, 1932).
14. *Carabus* (s. str.) *granulatus ussuriensis* (Nanam, HB, ?, VI, 1930).
15. *Carabus* (s. str.) *granulatus telluris* (Fukushimagata, Tsukioka Pref., Honshu, Japan, 1, III, 1969).
16. *Carabus* (s. str.) *granulatus telluris* (Lake Jyusanko, Aomori Pref., Honshu, Japan, 21, VIII, 1970).
17. *Carabus* (s. str.) *granulatus yezoensis* (Kawayu, Kushiro, Hokkaido, Japan 10, VII, 1969).
18. *Carabus (Eutelocarabus) arvensis germaniae* (Hoffenheim, Gr. Wald, Germany, ?, VI, 1974).
19. *Carabus (Eutelocarabus) conciliator faldermanni* (Nanam, HB, ?, V, 1928).
20. *Carabus (Eutelocarabus) conciliator hokkaidensis* (Mt. Apoidake, Hidaka, Honshu, Japan, 5-9, VIII, 1970).
21. *Carabus (Isiocarabus) fiduciarus kirinicus* (Mt. Un'gilsan, GG, 22, V, 1983).
22. *Carabus (Isiocarabus) fiduciarus kirinicus* (Mt. Ch'iaksan, GW, 10, VIII, 1971).
23. *Carabus (Isiocarabus) fiduciarus saishutoicus* (Mt. Hallasan, JJ, 1, VI, 1972).
24. *Carabus (Isiocarabus) fiduciarus saishutoicus* (Mt. Hallasan, JJ, 8, VI, 1972).
25. *Carabus (Ohomopterus) dehaanii dehaanii* (Mt. Hieizan, Kyoto Pref., Honshu, Japan, 15, I, 1967).
26. *Carabus (Ohomopterus) dehaanii tosanus* (Ashizurimisaki, Khochi Pref., Shikoku, Japan, 3, I, 1971).
27. *Carabus (Ohomopterus) dehaanii strenus* (Mt. Sobozan, Ohita Pref., Kyushu, Japan, 29, XII, 1969).
28. *Carabus (Ohomopterus) japonicus tsushimae* (Mt. Mitake, Is. Tsushima, Nagasaki Pref., Japan, 27, III, 1972).
29. *Carabus (Ohomopterus) lewisianus awakazusanus* (Mt. Tomisan, Chiba Pref., Honshu, Japan, 2, I, 1969).
30. *Carabus (Ohomopterus) albrechti freyi* (Ogi, Is. Sadogashima, Honshu, Japan, 21, XI, 1971).
31. *Carabus (Ohomopterus) yamato* (Mt. Katsuragisan, Nara Pref., Honshu, Japan, 30, V-4, VI, 1975).
32. *Carabus (Ohomopterus) esakii* (Izu Peninsula, Shizuoka Pref., Honshu, Japan, 20, XII, 1973).



## Plate XCVII.

### Female inner plates of vaginal apophyses of carabids (2).

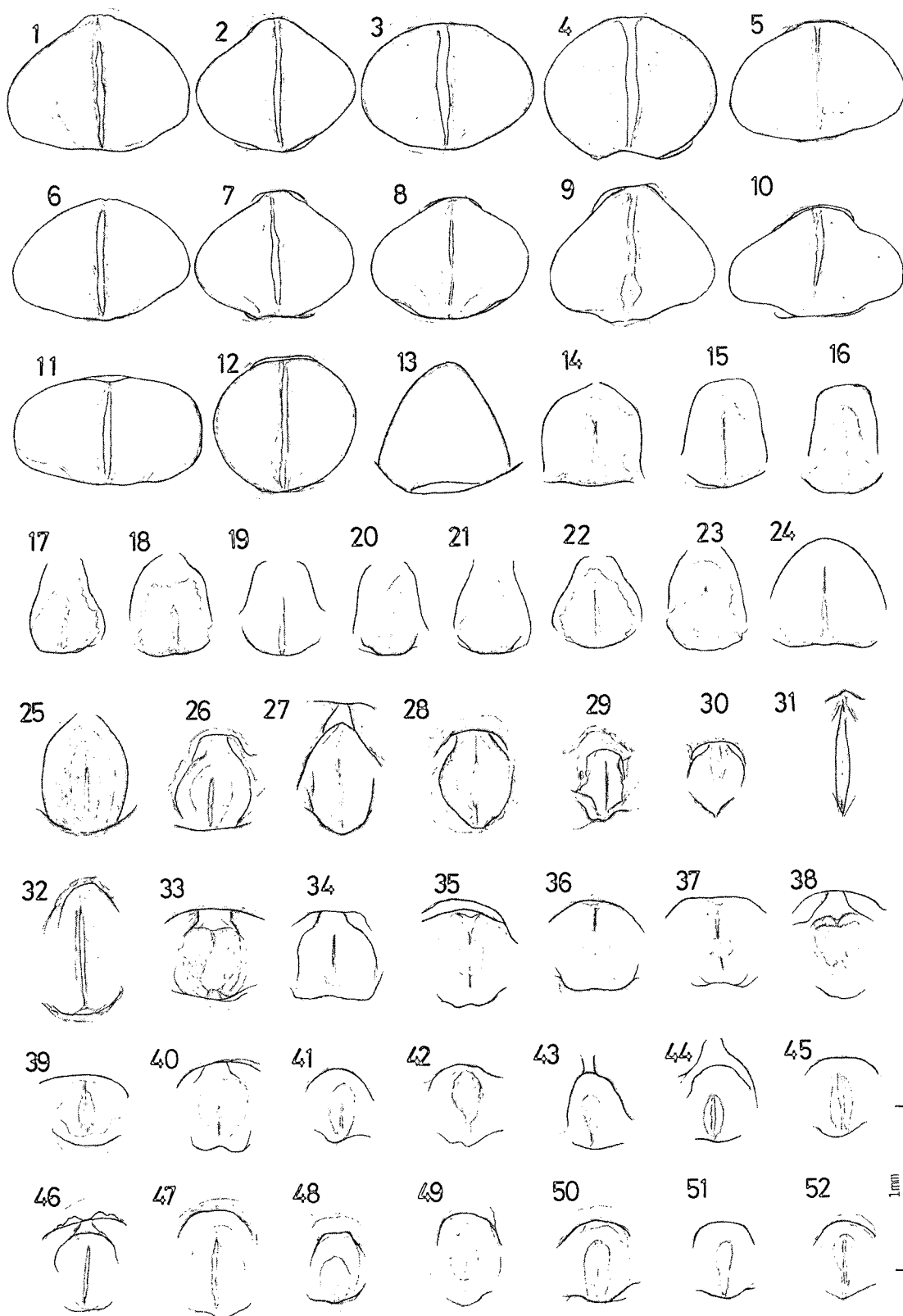
1. *Carabus (Ohomopterus) yaconinus yaconinus* (Mt. Hanataka, Shimane Pref., Honshu, Japan, 20, III, 1969).
2. *Carabus (Ohomopterus) yaconinus iwawakianus* (Mt. Iwawakisan, Osaka Pref., Honshu, Japan, 27-29, V, 1977).
3. *Carabus (Ohomopterus) insulicola insulicola* (Kizoro, Saitama Pref., Honshu, Japan, ?, II, 1968).
4. *Carabus (Ohomopterus) insulicola arrowianus* (Ohyama, Aichi Pref., Honshu, Japan, 3, III, 1968).
5. *Carabus (Ohomopterus) uenoi* (Mt. Katsuraisan, Nara Pref., Honshu, Japan, 30, V, -4, VI, 1975).
6. *Carabus (Eucarabus) ullrichi ullrichi* (Slov., Lipt., Osada, Czechoslovakia, ?, VIII, 1968).
7. *Carabus (Parhomopterus) sternbergi huchangensis* subsp. nov. (Huch'ang, PB, 26, VII, 1935).
- 8,9. *Carabus (Parhomopterus) sternbergi cartereti* (Mt. Sölaksan, GW, 27, VII, 1982).
10. *Carabus (Parhomopterus) sternbergi cartereti* (Mt. Odaesan, GW, 18, IX, 1982).
11. *Carabus (Parhomopterus) sternbergi cartereti* (Mt. Sogŭngang, GW, 7, IX, 1980).
12. *Carabus (Parhomopterus) sternbergi cartereti* (Mt. T'aebaeksan, GW, 18, VI, 1974).
13. *Carabus (Parhomopterus) sternbergi cartereti* (Mt. T'aebaeksan, GW, 27, VI, 1976).
- 14,15. *Carabus (Parhomopterus) sternbergi sobaeksanensis* subsp. nov. (Mt. Sobaeksan, GB, 24, VII, 1977).
- 16,17. *Carabus (Parhomopterus) sternbergi palgongsanensis* subsp. nov. (Mt. P'algongsan, GB, 10, IX, 1982).
18. *Carabus (Parhomopterus) sternbergi tongdosanus* subsp. nov. (Mt. Sinbulsan, GN, 25, IX, 1982).
- 19,20. *Carabus (Parhomopterus) sternbergi chirisanensis* subsp. nov. (Mt. Chirisan, GN, 13, VII, 1981).
21. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Pangdaesan, GW, 27, VII, 1974).
22. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Pangdaesan, GW, 30, VII, 1974).
23. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Myŏngjisan, GG, 6, VI, 1976).
- 24,25. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Soyosan, GG, 5, VI, 1977).
26. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Aengmubong, GG, 26, VI, 1971).
27. *Carabus (Parhomopterus) sternbergi sternbergi* (Kwangnŭng, GG, 15, VIII, 1971).
28. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Ch'ŏnmasan, GG, 5, IV, 1969).
29. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Tobongsan, GG, 19, VIII, 1976).
30. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Pukhansan, GG, 11, VII, 1976).
31. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Tŏgamsan, GG, 6, IX, 1976).
32. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Yongmunsan, GG, 7, VI, 1977).
33. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Ch'iaksan, GW, 14, VI, 1976).
- 34,35. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Kwangdŏksan, CN, 11, VII, 1982).



# Plate XCVIII.

## Female inner plates of vaginal apophyses of carabids (3).

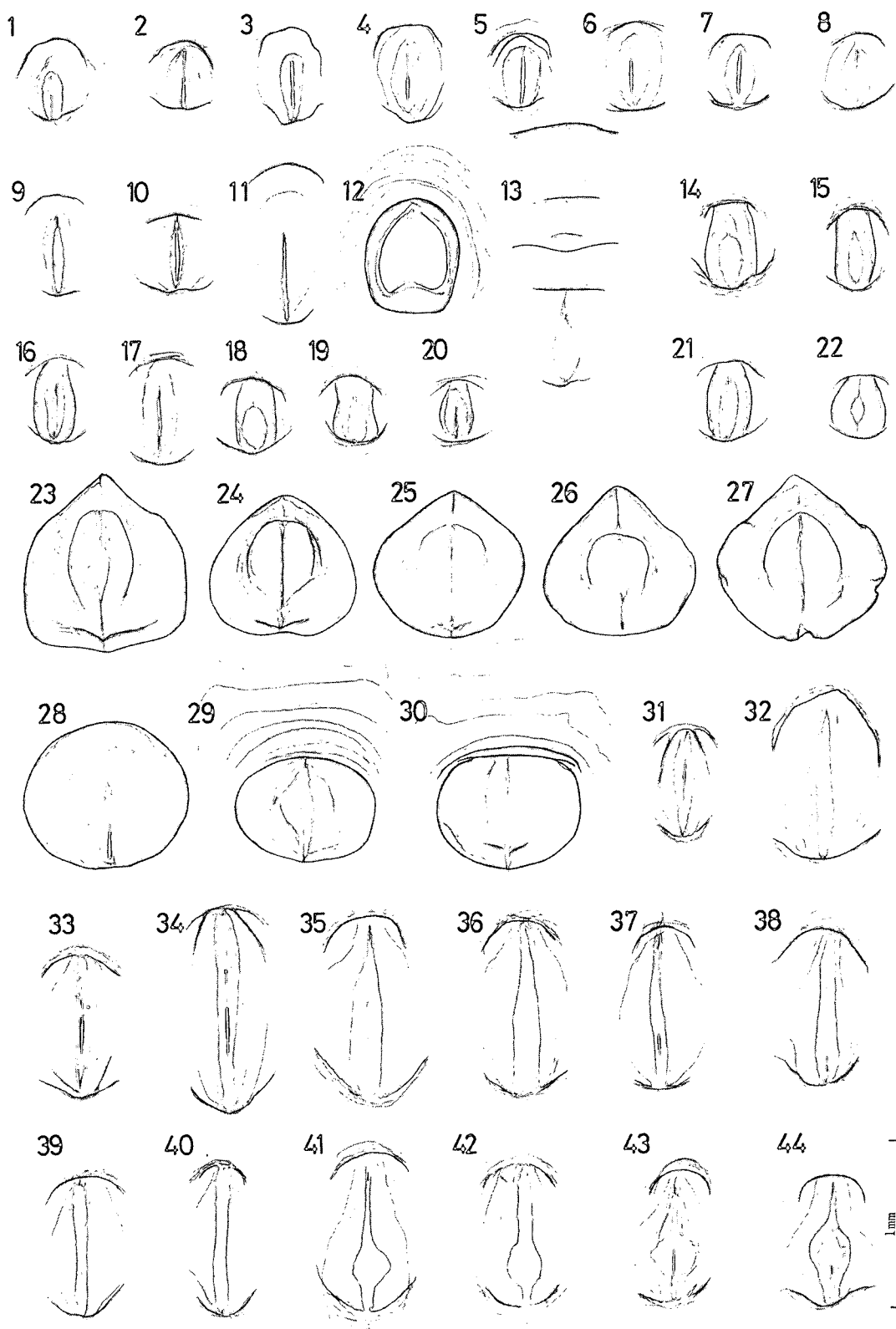
- 1,2. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Kyeryongsan, CN, 14, IX, 1975).
- 3,4. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Songnisan, CB, 10, VI, 1977).
- 5,6. *Carabus (Parhomopterus) sternbergi honamensis* subsp. nov. (Mt. Chogyesan, JN, 5, VI, 1983).
- 7,8. *Carabus (Parhomopterus) sternbergi touzalini* (Mt. Hallasan, JJ, 7, VI, 1972).
- 9,10. *Carabus (Parhomopterus) sternbergi kojedoensis* subsp. nov. (Is. Kōjedo, GN, 19, VI, 1970).
11. *Carabus (Parhomopterus) namhaedoensis* sp. nov. (Mt. Kūmsan in Is. Namhaedo, GN, 13, VI, 1977).
12. *Carabus (Orientocarabus) billbergi pumilus* subgen. nov. (Pujōllyōng, HN, ?, VIII, 1935).
13. *Lipaster (Morphocarabus) monilis consitus* (Muhlhouse, France, 20, IV, 1976).
14. *Lipaster (Leptinocarabus) wulffiussi ssangnamensis* subsp. nov. (Ssangnamdong, Huch'ang, PB, 14, VII, 1937).
- 15,16. *Lipaster (Leptinocarabus) wulffiussi opacipennis* (Mt. Sōlaksan, GW, 12, VIII, 1969).
17. *Lipaster (Leptinocarabus) wulffiussi opacipennis* (Mt. Odaesan, GW, 7, VIII, 1971).
18. *Lipaster (Leptinocarabus) wulffiussi opacipennis* (Mt. Odaesan, GW, 8, VIII, 1971).
19. *Lipaster (Leptinocarabus) wulffiussi opacipennis* (Mt. Pangdaesan, GW, 30, VII, 1974).
- 20,21. *Lipaster (Leptinocarabus) wulffiussi opacipennis* (Mt. Myōngjisan, GG, 6, VI, 1976).
- 22,23. *Lipaster (Leptinocarabus) wulffiussi opacipennis* (Mt. Tōgamsan, GG, 6, IX, 1976).
24. *Lipaster (Leptinocarabus) wulffiussi alpinus* subsp. nov. (Mt. T'aebaeksan, GW, 27, VI, 1976).
25. *Leptocarabus* (s. str.) *procerulus procerulus* (Senjyogahara, Nikko, Tochigi Pref., Honshu, Japan, 5, XI, 1969).
26. *Leptocarabus (Aulonocarabus) kurilensis sugai* (Mt. Rebundake, Is. Rebunto, Hokkaido, Japan, 2, VIII, 1968).
27. *Leptocarabus (Adelocarabus) canaliculatus careniger* (Mt. Kwanmobong, HB, 28, VII, 1934).
28. *Leptocarabus (Aulonocarabus) canaliculatus vojnitzi* (Hyesanjin, HN, ?, VII, 1937).
29. *Leptocarabus (Aulonocarabus) kwanmobongensis* sp. nov. (Mt. Kwanmobong, HB, 18, VII, 1932).
30. *Leptocarabus (Aulonocarabus) kwanmobongensis* sp. nov. (Mt. Kwanmobong, HB, 28, VII, 1934).
31. *Leptocarabus (Weolseocarabus) koreanus weolseoe* subgen. et subsp. nov. (Mt. Sōlaksan, GW, 9, VIII, 1969).
32. *Leptocarabus (Weolseocarabus) koreanus koreanus* subgen. nov. (Mt. Kach'ilbong, GW, 24, VII, 1971).
33. *Leptocarabus (Adelocarabus) semiopacus* (Mt. Sōlaksan, GW, 13, VIII, 1969).
34. *Leptocarabus (Adelocarabus) semiopacus* (Mt. Sobaeksan, GB, 23, VII, 1977).
- 35,36. *Leptocarabus (Adelocarabus) semiopacus* (Mt. Kyeryongsan, CN, 14, IX, 1975).
37. *Leptocarabus (Adelocarabus) semiopacus* (Mt. Hwanghaksan, GB, 29, IX, 1982).
38. *Leptocarabus (Adelocarabus) semiopacus* (Mt. P'algongsan, GB, 10, IX, 1982).
39. *Leptocarabus (Adelocarabus) semiopacus* (Mt. Tōgyusan, JB, 22, VIII, 1977).
40. *Leptocarabus (Adelocarabus) semiopacus* (Mt. Chirisan, GN, 12, VI, 1983).
41. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Kwanmobong, HB, 18, VII, 1932).
42. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Sōlaksan, GW, 30, VII, 1969).
43. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Sōlaksan, GW, 13, VIII, 1969).
44. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Odaesan, GW, 7, VIII, 1971).
45. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Pangdaesan, GW, 28, VII, 1974).
- 46,47. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Myōngjisan, GG, 7, VI, 1976).
48. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Pukhansan, GG, 12, VII, 1976).
- 49,50. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Tōgamsan, GG, 6, IX, 1976).
51. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. T'aebaeksan, GW, 27, VI, 1976).
52. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Sobaeksan, GB, 24, VII, 1977).



# Plate XCIX.

## Female inner plates of vaginal apophyses of carabids (4).

1. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Kyeryongsan, CN, 14, IX, 1975).
2. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Hwanghaksan, GB, 29, IX, 1982).
3. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. P'algongsan, GB, 3, IX, 1982).
4. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. P'algongsan, GB, 10, IX, 1982).
5. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Kayasan, GN, 12, IX, 1982).
6. *Leptocarabus (Adelocarabus) seishinensis seishinensis* (Mt. Chogyesan, JN, 5, VI, 1983).
- 7,8. *Leptocarabus (Adelocarabus) seishinensis seunglaki* subsp. nov. (Mt. Chirisan, GN, 6, VI, 1983).
9. *Leptocarabus (Adelocarabus) arboreus arboreus* (Aizankei, Mt. Daisetsuzan, Hokkaido, Japan, 12-15, VII, 1970).
10. *Leptocarabus (Adelocarabus) exilis babai* (Mt. Tenguharayama, Nagano Pref., Honshu, Japan, 15, IX, 1969).
11. *Leptocarabus (Astenocarabus) opaculus kurosawai* (Aizankei, Mt. Daisetsuzan, Hokkaido, Japan, 12-15, VII, 1970).
12. *Leptocarabus (Pentacarabus) harmandi okutamaensis* (Mt. Mitsutogeyama, Yamanashi Pref., Honshu, Japan, 2, VI, 1971).
13. *Scambocarabus kruberi kruberi* (Mt. Kwanmobong, HB, 18, VII, 1932).
14. *Tomocarabus fraterculus affinis* subsp. nov. (Mt. Sölkasan, GW, 9, VI, 1971).
15. *Tomocarabus fraterculus affinis* subsp. nov. (Mt. Odaesan, GW, 18, IX, 1982).
- 16,17. *Tomocarabus fraterculus affinis* subsp. nov. (Mt. Myöngjisan, GG, 27, V, 1978).
18. *Tomocarabus fraterculus assimilis* subsp. nov. (Mt. T'aebaeksan, GW, 27, VI, 1976).
19. *Tomocarabus fraterculus assimilis* subsp. nov. (Mt. P'algongsan, GB, 18, IV, 1983).
20. *Tomocarabus fraterculus assimilis* subsp. nov. (Mt. P'algongsan, GB, 24, V, 1983).
- 21,22. *Tomocarabus fraterculus assimilis* subsp. nov. (Mt. Chirisan, GN, 6, VI, 1983).
23. *Megodontus* (s. str.) *purpurascens crenatocostatus* (Bruxelle, Belgium, ?, VI, 1975).
24. *Megodontus* (s. str.) *violaceus candisatus* (Bayriseher Wald, Buchenau, Germany, 14, IX, 1975).
25. *Megodontus (Ainocarabus) kolbei kolbei* (Mt. Apoidake, Hidaka, Hokkaido, Japan, 26, VIII, 1971).
26. *Megodontus (Ainocarabus) kolbei kosugei* (Mt. Shakotandake, Shiribeshi, Hokkaido, Japan, 18-24, VIII, 1972).
27. *Megodontus (Ainocarabus) kolbei munakataorum* (Mt. Daisengen, Oshima, Hokkaido, Japan, 1, IX, 1971).
28. *Procrustes coriaceus* (Munnes Tadder Wald, bei Kissingen, Unterfranken, Germany, 10, IX, 1976).
29. *Megodontus (Nabicarabus) viettinghoffi borealis* subgen. et subsp. nov. (Mt. Kwanmobong, HB, 4, VIII, 1933).
30. *Megodontus (Nabicarabus) viettinghoffi caesareus* subgen. nov. (Khingnan, Manchuria, 20, VII, 1933).
31. *Damaster (Acoptolabus) seonhyeongae* sp. nov. (Huch'ang, PB, 15, VIII, 1936).
32. *Damaster (Koreacoptolabus) constricticollis constricticollis* subgen. nov. (Yapuloni, Manchuria, ?, VII, 1938).
33. *Damaster (Koreacoptolabus) constricticollis constricticollis* subgen. nov. (Huch'ang, PB, 15, VIII, 1936).
- 34,35. *Damaster (Koreacoptolabus) constricticollis constricticollis* subgen. nov. (Mt. T'aebaeksan, GW, 28, VI, 1976).
36. *Damaster (Koreacoptolabus) constricticollis chircicola* subgen. et subsp. nov. (Mt. Chirisan, GN, 13, VII, 1981).
37. *Damaster (Koreacoptolabus) constricticollis chircicola* subgen. et subsp. nov. (Mt. Chirisan, GN, 6, VI, 1983).
38. *Damaster (Koreacoptolabus) mirabilissimus* subgen. nov. (Mt. T'aebaeksan, GW, 27, VI, 1976).

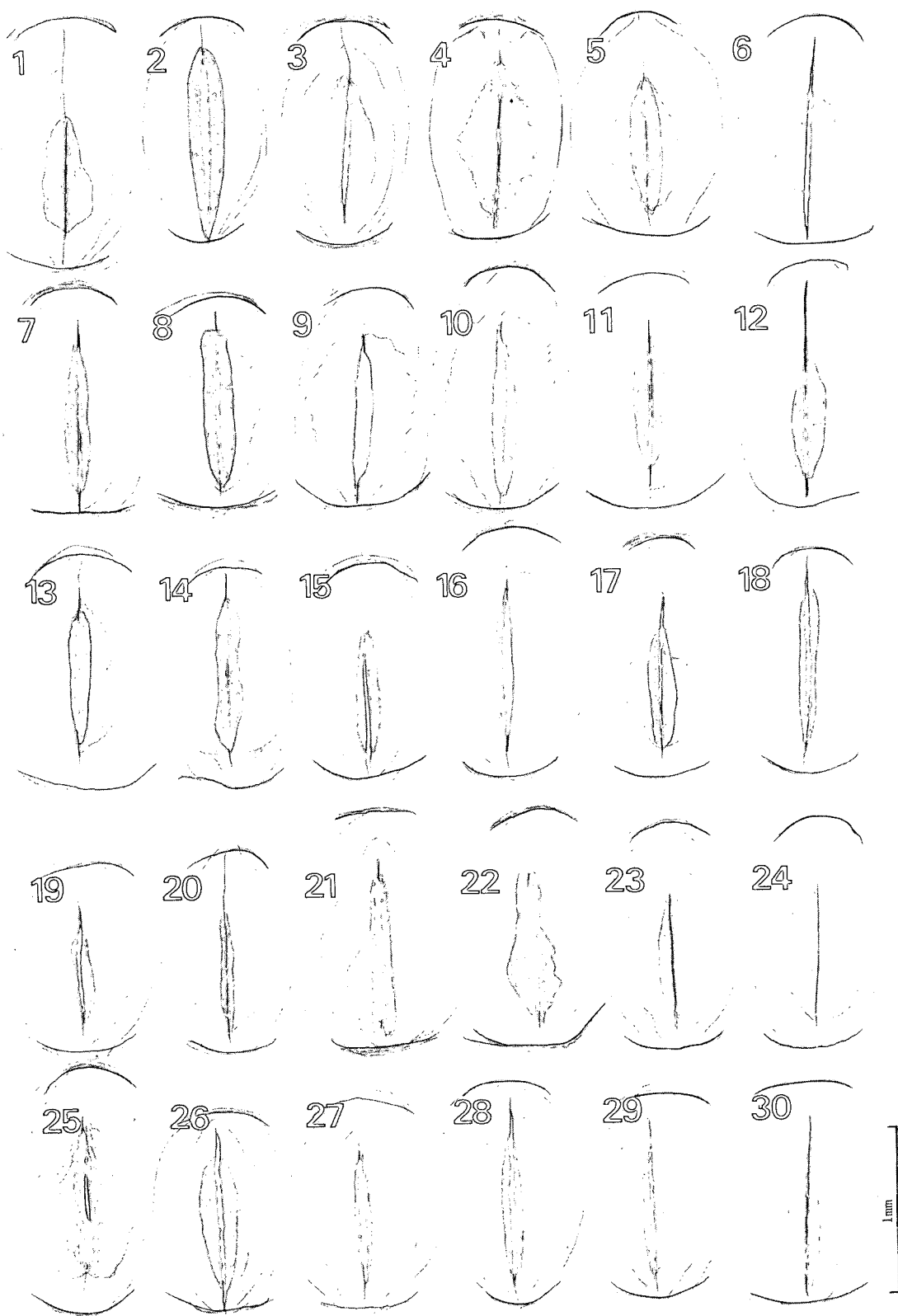


39. *Damaster (Koreacoptolabrus) mirabilissimus* subgen. nov. (Mt. Odaesan, GW, 5, VIII, 1971).
40. *Damaster (Koreacoptolabrus) mirabilissimus* subgen. nov. (Mt. Myōngjisan, GG, 6, VI, 1976).
41. *Damaster (Acoptolabrus) gehini gehini* (Jyozankei, Sapporo, Hokkaido, Japan, 24, VI, 1979).
42. *Damaster (Acoptolabrus) gehini radiatocostatus* (Oiwake Pass, Hidaka, Hokkaido, Japan, 27-30, VIII, 1972).
43. *Damaster (Acoptolabrus) gehini sapporensis* (Mt. Apoidake, Hidaka, Hokkaido, Japan, 26, VIII, 1971).
44. *Damaster (Acoptolabrus) gehini munakatai* (Mt. Daisengendake, Hokkaido, Japan, 19-23, VIII, 1973).

### Plate C.

#### Female inner plates of vaginal apophyses of carabids (5).

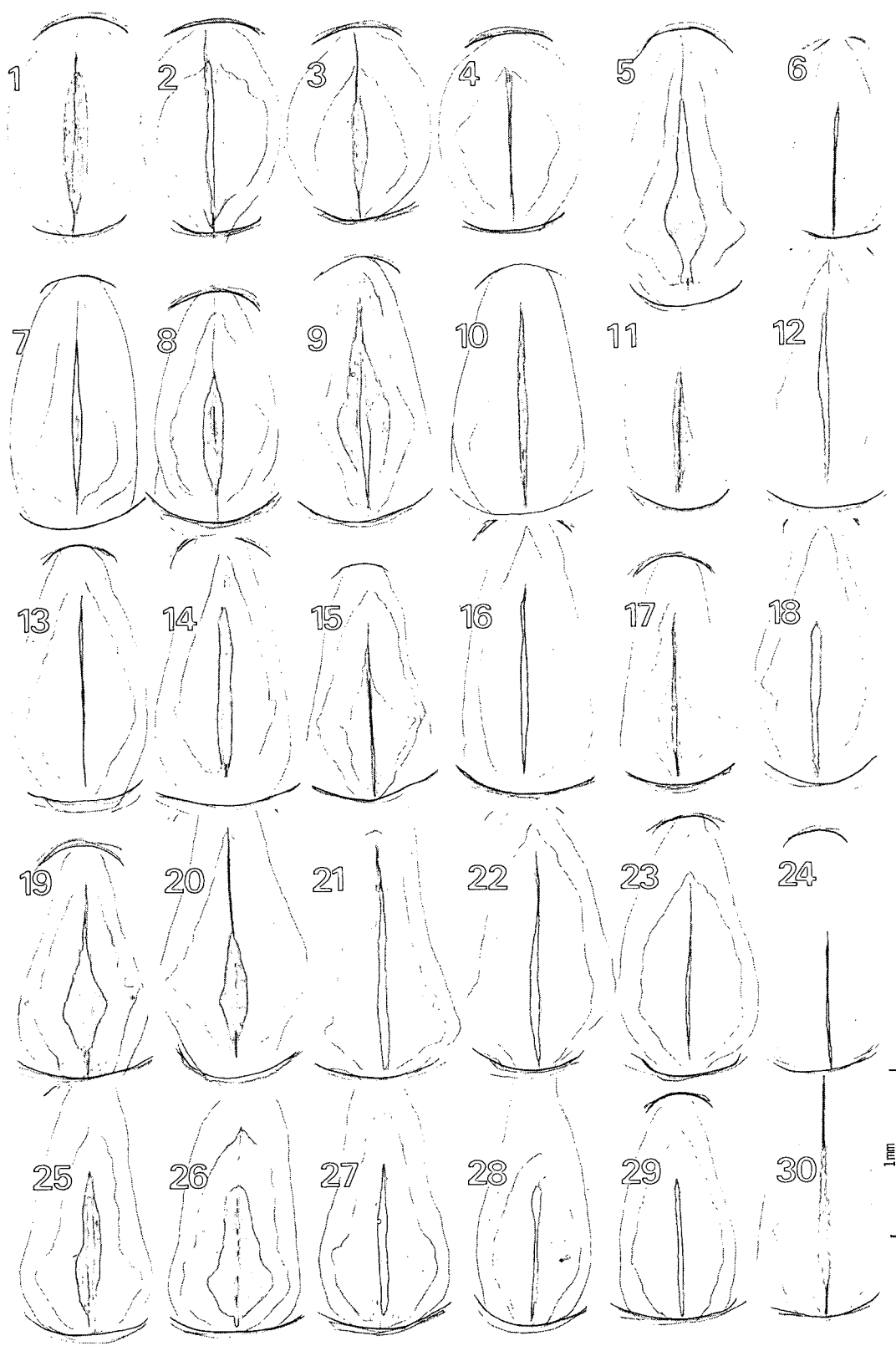
1. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Kwanmobong, HB, 23, VIII, 1937).
2. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Myohyangsan, PB, 26, VII, 1937).
3. *Damaster (Coptolabrus) jankowskii jankowskii* (Kapsan, HN, ?, VII, 1926).
4. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Sōlaksan, GW, 13, VI, 1970).
5. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Sōlaksan, GW, 23, VII, 1970).
6. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Wangbangsan, GG, 6, VIII, 1976).
7. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Myōngjisan, GG, 19, VI, 1976).
8. *Damaster (Coptolabrus) jankowskii jankowskii* (Kwangnūng, GG, 15, VIII, 1971).
9. *Damaster (Coptolabrus) jankowskii jankowskii* (Aengmubong, GG, 27, VI, 1971).
10. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Pukhansan, GG, 11, VII, 1976).
11. *Damaster (Coptolabrus) jankowskii jankowskii* (Tobongsan, GG, 19, VIII, 1976).
12. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Tobongsan, GG, 6, IX, 1976).
13. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Yongmunsan, GG, 14, IX, 1980).
14. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Ch'iaksan, GW, 25, VIII, 1977).
15. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Sobaeksan, GB, 24, VII, 1977).
- 16,17. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Kyeryongsan, CN, 14, IX, 1975).
18. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. P'algongsan, GB, 10, IX, 1982).
- 19,20. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. T'ohamsan, GB, 22, IX, 1982).
- 21,22. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Chogyesan, JN, 5, VI, 1983).
- 23,24. *Damaster (Coptolabrus) jankowskii kangwonensis* subsp. nov. (Mt. Odaesan, GW, 9, VIII, 1976).
25. *Damaster (Coptolabrus) jankowskii kangwonensis* subsp. nov. (Mt. T'aebaeksan, GW, 27, VI, 1976).
- 26,27. *Damaster (Coptolabrus) jankowskii fusanus* (Pusan, GN, 3, VI, 1977).
- 28,29. *Damaster (Coptolabrus) jankowskii kojensis* (Is. Kōjedo, GN, 22-31, VII, 1969).
30. *Damaster (Coptolabrus) jankowskii kojensis* (Mt. Kūmsan in Is. Namhaedo, GN, 13, VI, 1977).



# Plate CI.

## Female inner plates of vaginal apophyses of carabids (6).

1. *Damaster (Coptolabrus) jankowskii kojensis* (Mt. Kŭmsan in Is. Namhaedo, GN, 13, VI, 1977).
2. *Damaster (Coptolabrus) jankowskii quelpartianus* (Mt. Hallasan, JJ, 22, VI, 1976).
3. *Damaster (Coptolabrus) jankowskii quelpartianus* (Mt. Hallasan, JJ, 29, VII, 1978).
4. *Damaster (Coptolabrus) jankowskii quelpartianus* (Chungmun, JJ, 20, VII, 1978).
5. *Damaster (Coptolabrus) fruhstorferi* (Mt. Mitake, Is. Tsushima, Nagasaki Pref., Japan, 27, IV, 1972).
6. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Kwanmobong, HB, 18, VII, 1932).
7. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Sŏlaksan, GW, 22, VIII, 1969).
8. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Sŏlaksan, GW, 17, IX, 1973).
- 9,10. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Odaesan, GW, 9, VIII, 1976).
11. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Pangdaesan, GW, 26, VII, 1974).
12. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Sobaeksan, GB, 6, VIII, 1980).
- 13,14. *Damaster (Coptolabrus) smaragdinus branickii* (Kwangnŭng, GG, 25, VIII, 1968).
15. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Aengmubong, GG, 28, VIII, 1971).
16. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Tobongsan, GG, 19, VIII, 1976).
17. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Ch'ŏnmasan, GG, 7, VII, 1972).
- 18,19. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Wangbangsan, GG, 2, VIII, 1977).
20. *Damaster (Coptolabrus) smaragdinus branickii* (Konjiam, GG, 6, IX, 1976).
- 21,22. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Kyeryongsan, CN, 14, IX, 1975).
- 23,24. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. P'algongsan, GB, 24, V, 1983).
25. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. T'ohamsan, GB, 22, IX, 1982).
- 26,27. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Yŏngch'wisan, GN, 2, VI, 1983).
28. *Damaster (Coptolabrus) smaragdinus branickii* (Sanin Myŏn, GN, 28, V, 1983).
29. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Muhaksan, GN, 29, V, 1983).
30. *Damaster (Coptolabrus) smaragdinus branickii* (Is. Kŏjedo, GN, 16-20, VII, 1970).



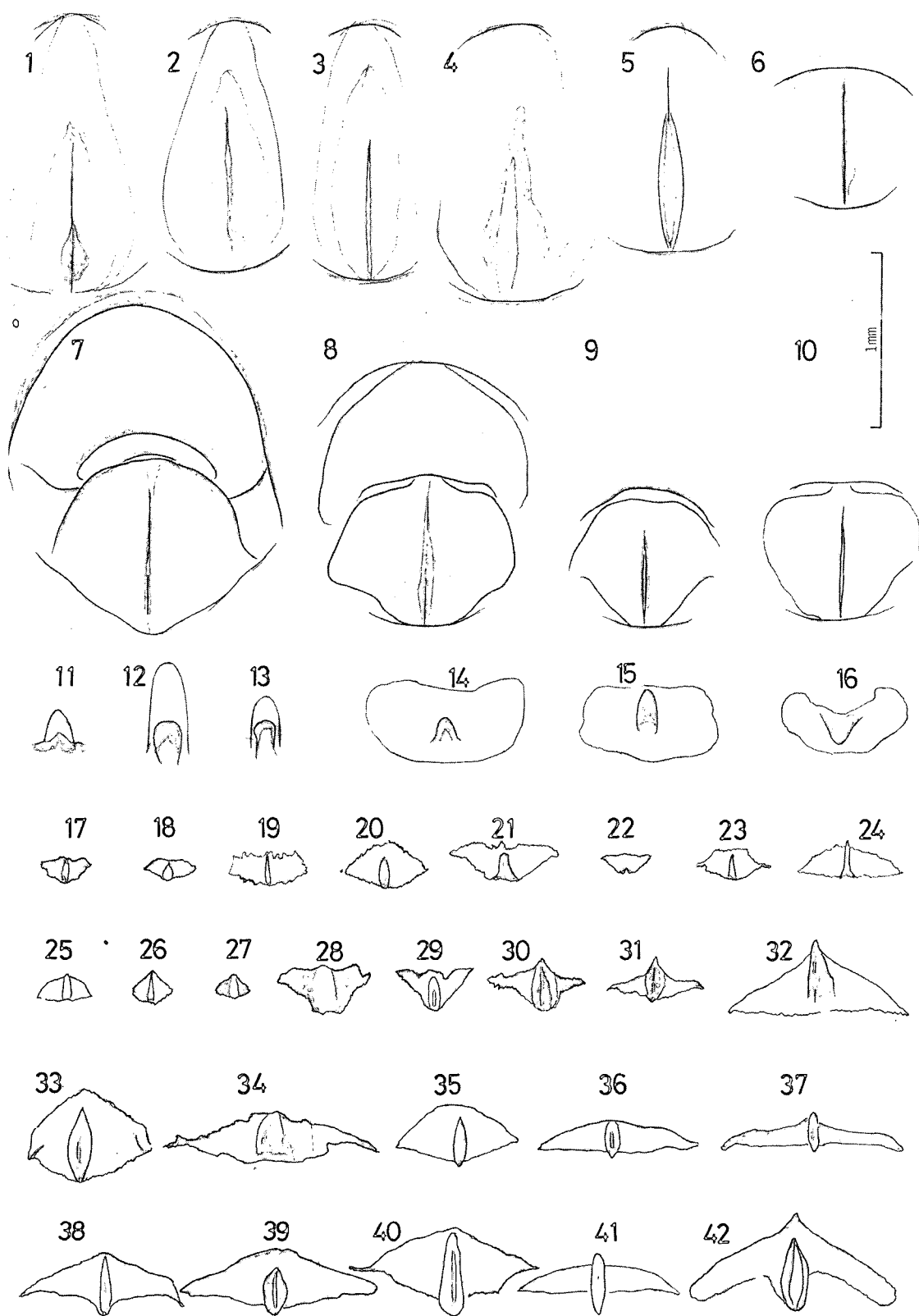
## Plate CII.

### Female inner plates of vaginal apophyses of carabids (7).

1. *Damaster (Coptolabrus) smaragdinus branickii* (Is. Kōjedo, GN, 16-20, VII, 1970).
2. *Damaster (Coptolabrus) smaragdinus sangjaei* subsp. nov. (Mt. Chirisan, GN, 6, VI, 1983).
3. *Damaster (Coptolabrus) smaragdinus hoenggandoensis* subsp. nov. (Is. Hoenggando, JJ, 4, VIII, 1970).
4. *Damaster (Coptolabrus) smaragdinus monilifer* (Mt. Hallasan, JJ, 29, VII, 1978).
5. *Damaster (Coptolabrus) nankotaizanus* (Taiwan, ?, VII, 1967).
6. *Damaster* (s. str.) *blaptoides rugipennis* (Asahigawa, Hokkaido, Japan, 8, VII, 1977).
7. *Damaster* (s. str.) *blaptoides capito* (Mt. Kinpokusen, Is. Sado, Niigata Pref., Japan, 2-5, III, 1971).
8. *Damaster* (s. str.) *blaptoides fortunei* (Is. Awashima, Niigata Pref., Honshu, Japan, 31, III, 1970).
9. *Damaster* (s. str.) *blaptoides blaptoides* (Yamanomachi Kobe Pref., Honshu, Japan, 10, III, 1968).
10. *Damaster* (s. str.) *blaptoides montanus* (Mt. Adatarasan, Fukushima Pref., Honshu, Japan, 8, IV, 1970).

### Female epivaginal sclerites of carabids (1).

11. *Apotomopter (Limnocarabus) clathratus maacki* (Nanam, HB, ?, VIII 1929).
12. *Apotomopter (Limnocarabus) clathratus maacki* (Harbin, Manchuria, ?, VIII 1937).
13. *Apotomopter (Limnocarabus) clathratus aquatilis* comb. nov. (Lake Jyusanko, Aomori Pref., Honshu, Japan, 4-6, IX, 1971).
14. *Apotomopter (Euleptocarabus) porrecticollis porrecticollis* (Mt. Sotoyama, Nikko, Tochigi Pref., Honshu, Japan, 3, XI, 1969).
15. *Apotomopter (Euleptocarabus) porrecticollis kansaiensis* (Kameoka City, Kyoto Pref., Honshu, Japan, 15, I, 1966).
16. *Apotomopter* (s. str.) *sauteri* (Tengchih, Kaoshunsien, Taiwan, ?, VIII, 1975).
17. *Carabus* (s. str.) *granulatus granulatus* (Kissingen, Unterfranken Germany, 1, III, 1976).
18. *Carabus* (s. str.) *granulatus granulatus* (Kissingen Unterfranken, Germany, 19, XI, 1975).
19. *Carabus* (s. str.) *granulatus granulatus* (Moravia, Zidlochovice, Czechoslovakia, ?, VI, 1967).
20. *Carabus* (s. str.) *granulatus ussuriensis* (Mt. Kwanmobong, HB, 18, VII, 1932).
21. *Carabus* (s. str.) *granulatus ussuriensis* (Nanam, HB, ?, VI, 1930).
22. *Carabus* (s. str.) *granulatus telluris* (Fukushimagata, Tsukioka, Pref., Honshu, Japan, 1, III, 1969).
23. *Carabus* (s. str.) *granulatus telluris* (Lake Jyusanko, Aomori Pref., Honshu, Japan, 21, VIII, 1970).
24. *Carabus* (s. str.) *granulatus yezoensis* (Kawayu, Kushiro, Hokkaido, Japan, 10, VII, 1969).
25. *Carabus (Eutelocarabus) arvensis germaniae* (Gr. Wald, Hoffenheim, Germany, ?, VI, 1974).
26. *Carabus (Eutelocarabus) conciliator faldermanni* (Nanam, HB, ?, V, 1928).
27. *Carabus (Eutelocarabus) conciliator hokkaidensis* (Mt. Apoidake, Hidaka, Hokkaido, Japan, 5-9, VIII, 1970).
28. *Carabus (Isiocarabus) fiduciarius kirinicus* (Mt. Un'gilsan, GG, 22, V, 1983).
29. *Carabus (Isiocarabus) fiduciarius kirinicus* (Mt. Ch'iaksan, GW, 10, VIII, 1971).
30. *Carabus (Isiocarabus) fiduciarius saishutoicus* (Mt. Hallasan, JJ, 1, VI, 1972).
31. *Carabus (Isiocarabus) fiduciarius saishutoicus* (Mt. Hallasan, JJ, 8, VI, 1972).
32. *Carabus (Ohomopter) dehaanii dehaanii* (Mt. Hieizan, Kyoto Pref., Honshu, Japan, 15, I, 1967).
33. *Carabus (Ohomopter) dehaanii tosanus* (Ashizurimisaki, Khochi Pref., Shikoku, Japan, 3, I, 1971).
34. *Carabus (Ohomopter) dehaanii strenus* (Mt. Sobozan, Ohita Pref., Kyushu, Japan, 29, XII, 1969).
35. *Carabus (Ohomopter) japonicus tsushimae* (Mt. Mitake, Is. Tsushima, Nagasaki Pref., Japan, 27, III, 1972).
36. *Carabus (Ohomopter) lewisianus awakazusanus* (Mt. Tomisan, Chiba Pref., Honshu, Japan, 2, I, 1969).
37. *Carabus (Ohomopter) albrechti freyi* (Ogi, Is. Sadogashima, Honshu, Japan, 21, XI, 1971).
38. *Carabus (Ohomopter) yamato* (Mt. Katsuragisan, Nara Pref., Honshu, Japan, 30, V, 4, VI, 1975).
39. *Carabus (Ohomopter) esakii* (Izu Peninsula, Shizuoka Pref., Honshu, Japan, 20, XII, 1973).



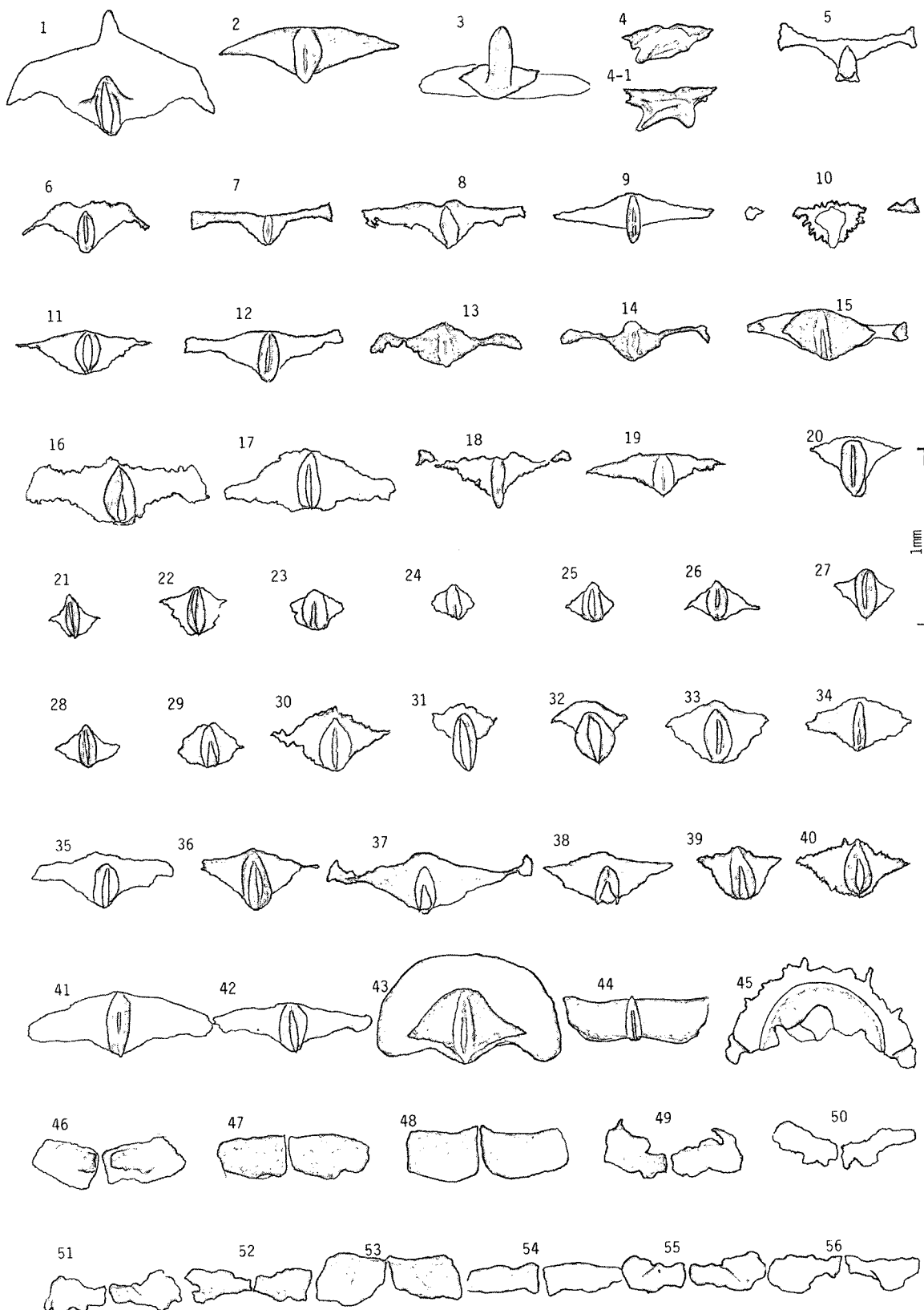
40. *Carabus (Ohomopterus) yaconinus yaconinus* (Mt. Hanataka, Shimane Pref., Honshu, Japan, 20, III, 1969).
41. *Carabus (Ohomopterus) yaconinus iwawakianus* (Mt. Iwawakisan, Osaka Pref., Honshu, Japan, 27-29, V, 1977).
42. *Carabus (Ohomopterus) insulicola insulicola* (Kizoro, Saitama Pref., Honshu, Japan, ?, II, 1968).

### Plate CIII.

#### Female epivaginal sclerites of carabids (2).

1. *Carabus (Ohomopterus) insulicola arrowianus* (Ohyama, Aichi Pref., Honshu, Japan, 3, III, 1968).
2. *Carabus (Ohomopterus) uenoi* (Mt. Katsurisan, Nara Pref., Honshu, Japan, 30, V, 4, VI, 1975).
3. *Carabus (Eucarabus) ullrichi ullrichi* (Slov., Lipt., Osada, Czechoslovakia, ?, VIII, 1968).
- 4,4-1. *Carabus (Parhomopterus) sternbergi huchangensis* subsp. nov. (Huch'ang, PB, 26, VII, 1935).
- 5,6. *Carabus (Parhomopterus) sternbergi cartereti* (Mt. Sölaksan, GW, 27, VII, 1982).
7. *Carabus (Parhomopterus) sternbergi cartereti* (Mt. Odaesan, GW, 18, IX, 1982).
8. *Carabus (Parhomopterus) sternbergi cartereti* (Mt. Sogŭmgang, GW, 7, IX, 1980).
9. *Carabus (Parhomopterus) sternbergi cartereti* (Mt. T'aebaeksan, GW, 18, VI, 1974).
10. *Carabus (Parhomopterus) sternbergi cartereti* (Mt. T'aebaeksan, GW, 27, VI, 1976).
- 11,12. *Carabus (Parhomopterus) sternbergi sobaeksanensis* subsp. nov. (Mt. Sobaeksan, GB, 24, VII, 1977).
- 13,14. *Carabus (Parhomopterus) sternbergi Palgongsanensis* subsp. nov. (Mt. P'algongsan, GB, 10, IX, 1982).
15. *Carabus (Parhomopterus) sternbergi tongdosanus* subsp. nov. (Mt. Sinbulsan, GN, 25, IX, 1982).
- 16,17. *Carabus (Parhomopterus) sternbergi chirisanensis* subsp. nov. (Mt. Chirisan, GN, 13, VII, 1981).
18. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Pangdaesan, GW, 27, VII, 1974).
19. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Pangdaesan, GW, 30, VII, 1974).
20. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Myŏngjisan, GG, 6, VI, 1976).
- 21,22. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Soyosan, GG, 5, VI, 1977).
23. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Aengmubong, GG, 26, VI, 1971).
24. *Carabus (Parhomopterus) sternbergi sternbergi* (Kwangnŭng GG, 15, VIII, 1971).
25. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Ch'ŏnmasan, GG, 5, IV, 1969).
26. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Tobongsan, GG, 19, VIII, 1976).
27. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Pukhansan, GG, 11, VII, 1976).
28. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Tŏgamsan, GG, 6, IX, 1976).
29. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Yongmunsan, GG, 7, VI, 1977).
30. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Ch'iaksan, GW, 14, VI, 1976).
- 31,32. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Kwangdŏksan, CN, 11, VII, 1982).
- 33,34. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Kyeryongsan, CN, 14, IX, 1975).
- 35,36. *Carabus (Parhomopterus) sternbergi sternbergi* (Mt. Songnisan, CB, 10, VI, 1977).
- 37,38. *Carabus (Parhomopterus) sternbergi honamensis* subsp. nov. (Mt. Chogyesan, JN, 5, VI, 1983).
- 39,40. *Carabus (Parhomopterus) sternbergi touzalini* (Mt. Hallasan JJ, 7, VI, 1972).
- 41,42. *Carabus (Parhomopterus) sternbergi kojedoensis* subsp. nov. (Is. Kojedo, GN, 19, VI, 1970).
43. *Carabus (Parhomopterus) namhaeensis* sp. nov. (Kŭmsan in Is. Namhaedo, GN, 13, VI, 1977).
44. *Carabus (Orientocarabus) billbergi pumilus* subgen. nov. (Pujŏllyŏng, HN, ?, VIII, 1935).
45. *Lipaster (Morphocarabus) monilis consitus* (Muhlhouse, France, 20, IV, 1976).
46. *Lipaster (Leptinocarabus) wulffiussi ssangnamensis* subsp. nov. (Huch'ang, PB, 14, VII, 1937).
- 47,48. *Lipaster (Leptinocarabus) wulffiussi opacipennis* (Mt. Sölaksan, GW, 12, VIII, 1969).
49. *Lipaster (Leptinocarabus) wulffiussi opacipennis* (Mt. Odaesan, GW, 7, VIII, 1971).
50. *Lipaster (Leptinocarabus) wulffiussi opacipennis* (Mt. Odaesan, GW, 8, VIII, 1971).
51. *Lipaster (Leptinocarabus) wulffiussi opacipennis* (Mt. Pangdaesan, GW, 30, VII, 1974).
- 52,53. *Lipaster (Leptinocarabus) wulffiussi opacipennis* (Mt. Myŏngjisan, GG, 6, VI, 1976).
- 54,55. *Lipaster (Leptinocarabus) wulffiussi opacipennis* (Mt. Togamsan, GG, 6, IX, 1976).
56. *Lipaster (Leptinocarabus) wulffiussi alpinus* subsp. nov. (Mt. T'aebaeksan, GW, 27, VI, 1976).

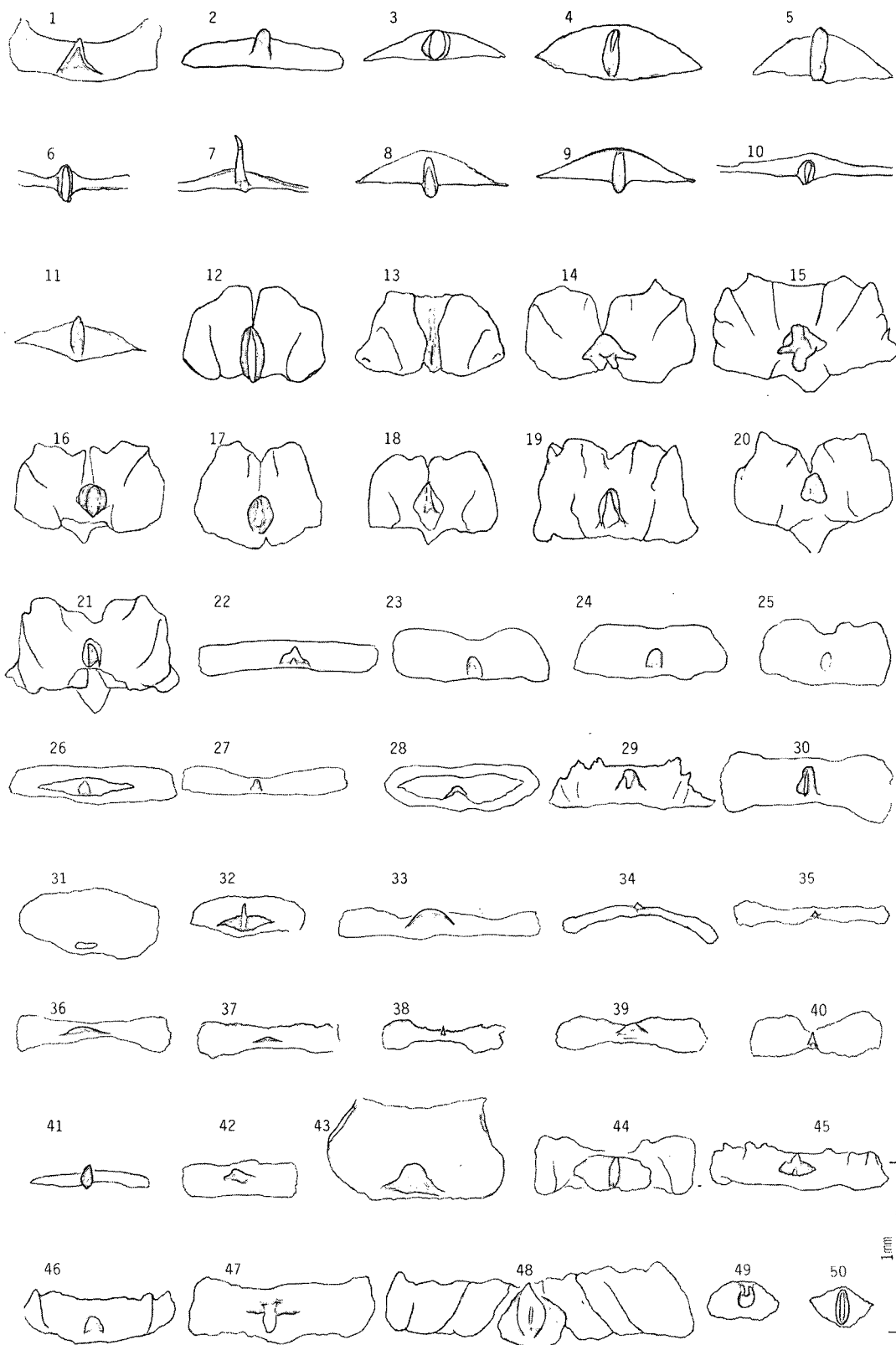
PLATE CIII



# Plate CIV.

## Female epivaginal sclerites of carabids (3).

1. *Leptocarabus* (s. str.) *procerulus procerulus* (Senjyogahara, Nikko, Tochigi Pref., Honshu, Japan, 5, XI, 1969).
2. *Leptocarabus* (*Aulonocarabus*) *kurilensis sugai* (Mt. Rebundake, Is. Rebunto, Hokkaido, Japan, 2, VII, 1968).
3. *Leptocarabus* (*Weolseocarabus*) *koreanus koreanus* subgen. nov. (Mt. Kach'ilbong, GW, 24, VII, 1981).
4. *Leptocarabus* (*Weolseocarabus*) *koreanus koreanus* subgen. nov. (Mt. Odaesan, GW, 9, VIII, 1976).
5. *Leptocarabus* (*Weolseocarabus*) *koreanus koreanus* subgen. nov. (Mt. Sogŭmgang, GW, 7, IX, 1980).
6. *Leptocarabus* (*Weolseocarabus*) *koreanus koreanus* subgen. nov. (Mt. Tut'asan, GW, 20, VII, 1979).
7. *Leptocarabus* (*Weolseocarabus*) *koreanus koreanus* subgen. nov. (Mt. T'aebaeksan, GW, 27, VI, 1976).
- 8,9. *Leptocarabus* (*Weolseocarabus*) *koreanus koreanus* subgen. nov. (Konjam, GG, 1, VIII, 1976).
10. *Leptocarabus* (*Weolseocarabus*) *koreanus koreanus* subgen. nov. (Mt. Hwanghaksan, GB, 29, IX, 1982).
11. *Leptocarabus* (*Weolseocarabus*) *koreanus koreanus* subgen. nov. (Kangch'on, GW, 31, V, 1975).
12. *Leptocarabus* (*Adelocarabus*) *semiopacus* (Mt. Sŏlaksan, GW, 13, VIII, 1969).
13. *Leptocarabus* (*Adelocarabus*) *semiopacus* (Mt. Sobaeksan, GB, 23, VII, 1977).
- 14,15. *Leptocarabus* (*Adelocarabus*) *semiopacus* (Mt. Kyeryongsan, CN, 14, IX, 1975).
16. *Leptocarabus* (*Adelocarabus*) *semiopacus* (Mt. Hwanghaksan, GB, 29, IX, 1982).
- 17,18. *Leptocarabus* (*Adelocarabus*) *semiopacus* (Mt. P'algongsan, GB, 10, IX, 1982).
19. *Leptocarabus* (*Adelocarabus*) *semiopacus* (Mt. Tŏgyusan, JB, 22, VIII, 1977).
20. *Leptocarabus* (*Adelocarabus*) *semiopacus* (Mt. Chirisan, GN, 13, VII, 1981).
21. *Leptocarabus* (*Adelocarabus*) *semiopacus* (Mt. Chirisan, GN, 12, VI, 1983).
22. *Leptocarabus* (*Adelocarabus*) *seishinensis seishinensis* (Mt. Odaesan, GW, 7, VIII, 1971).
23. *Leptocarabus* (*Adelocarabus*) *seishinensis seishinensis* (Mt. Hwanghaksan, GB, 29, IX, 1982).
24. *Leptocarabus* (*Adelocarabus*) *seishinensis seishinensis* (Mt. P'algongsan, GB, 3, IX, 1982).
25. *Leptocarabus* (*Adelocarabus*) *seishinensis seishinensis* (Mt. P'algongsan, GB, 10, IX, 1982).
26. *Leptocarabus* (*Adelocarabus*) *seishinensis seishinensis* (Mt. Chogyesan, JN, 5, VI, 1983).
- 27,28. *Leptocarabus* (*Adelocarabus*) *seishinensis seunglaki* subsp. nov. (Mt. Chirisan, GN, 6, VI, 1983).
29. *Leptocarabus* (*Adelocarabus*) *arboreus arboreus* (Aizankei, Mt. Daisetsuzan, Hokkaido, Japan, 12-15, VII, 1970).
30. *Leptocarabus* (*Adelocarabus*) *exilis babai* (Mt. Tenguharayama, Nagano Pref., Honshu, Japan, 12-15, VII, 1970).
31. *Leptocarabus* (*Astenocarabus*) *opaculus kurosawai* (Aizankei, Mt. Daisetsuzan, Hokkaido, Japan, 12-15, VII, 1970).
32. *Leptocarabus* (*Pentacarabus*) *harmandi okutamaensis* (Mt. Mitsutogeyama, Yamanashi Pref., Honshu, Japan, 2, VI, 1971).
33. *Scambocarabus kruberi kruberi* (Mt. Kwanmobong, HB, 18, VII, 1932).
34. *Tomocarabus fraterculus affinis* subsp. nov. (Mt. Sŏlaksan, GW, 9, VI, 1971).
35. *Tomocarabus fraterculus affinis* subsp. nov. (Mt. Odaesan, GW, 18, IX, 1982).
- 36,37. *Tomocarabus fraterculus affinis* subsp. nov. (Mt. Myŏngjisan, GG, 27, V, 1978).
38. *Tomocarabus fraterculus assimilis* subsp. nov. (Mt. T'aebaeksan, GW, 27, VI, 1976).
39. *Tomocarabus fraterculus assimilis* subsp. nov. (Mt. P'algongsan, GB, 18, IV, 1983).
40. *Tomocarabus fraterculus assimilis* subsp. nov. (Mt. P'algongsan, GB, 24, V, 1983).
- 41,42. *Tomocarabus fraterculus assimilis* subsp. nov. (Mt. Chirisan, GN, 6, VI, 1983).
43. *Megodontus* (s. str.) *purpurascens crenatocostatus* (Bruxelle, Belgium, ?, VI, 1975).
44. *Megodontus* (s. str.) *violaceus candisatus* (Bayriseher Wald, Buchenau, Germany, 14, IX, 1975).
45. *Megodontus* (*Ainocarabus*) *kolbei kolbei* (Mt. Apoidake, Hidaka, Hokkaido, Japan, 26, VIII, 1971).

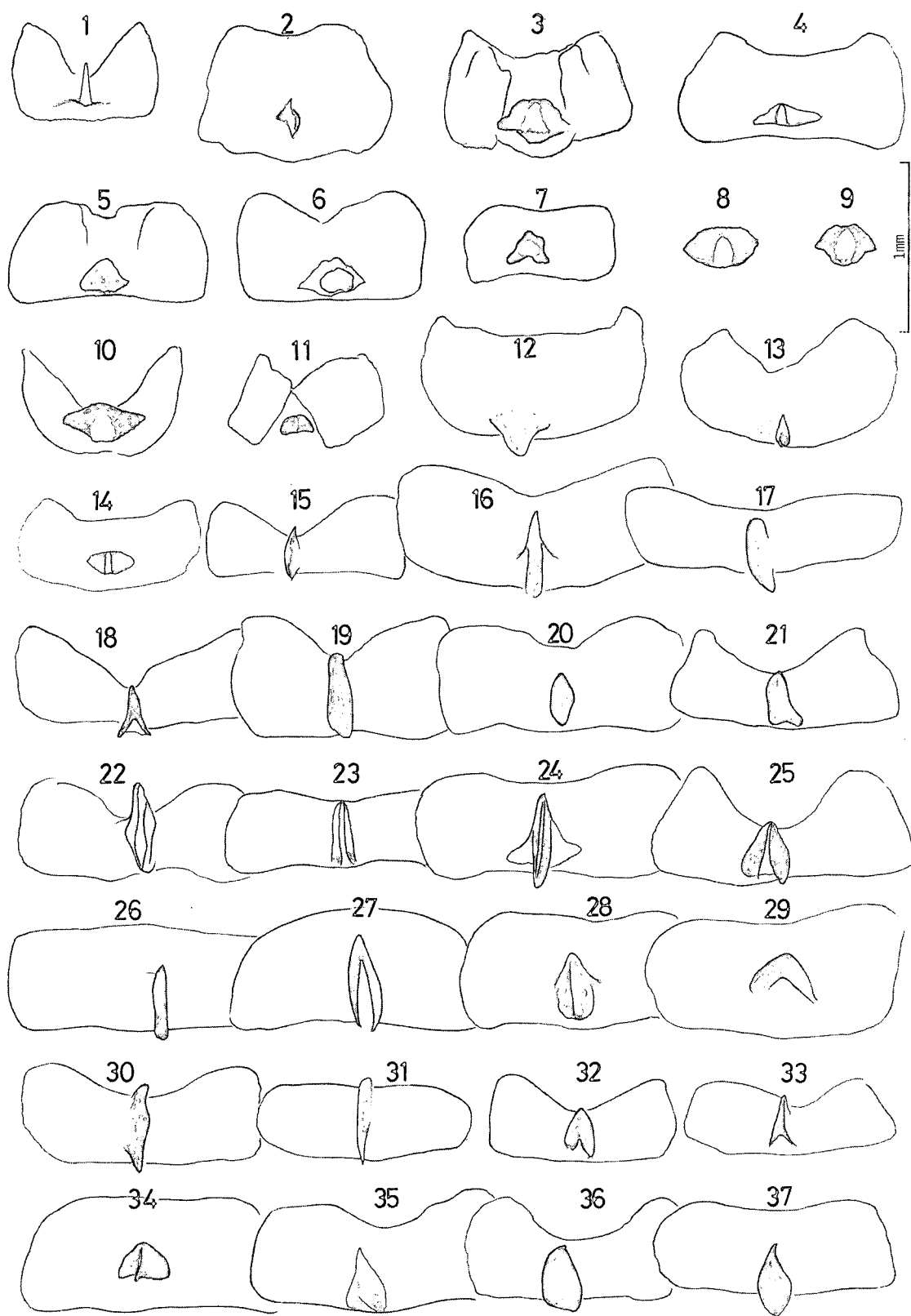


46. *Megodontus (Ainocarabus) kolbei kosugei* (Mt. Shakotandake, Shiribeshi, Hokkaido, Japan, 18-24, VIII, 1972).
47. *Megodontus (Ainocarabus) kolbei munakataorum* (Mt. Daisengen, Oshima, Hokkaido, Japan, 1, IX, 1971).
48. *Procrustes coriaceus* (Munnes Tadder Wald, bei Kissingen, Unterfranken, Germany, 10, IX, 1976).
49. *Megodontus (Nabicarabus) viettinghoffi borealis* subgen. et subsp. nov. (Mt. Kwanmobong, HB, 4, VIII, 1933).
50. *Megodontus (Nabicarabus) viettinghoffi caesareus* subgen. nov. (Khingan, Manchuria, 20, VII, 1933).

## Plate CV.

### Female epivaginal sclerites of carabids (4).

1. *Damaster (Acoptolabrus) seonhyeongae* sp. nov. (Huch'ang, PB, 15, VIII, 1936).
2. *Damaster (Koreacoptolabrus) constricticollis constricticollis* subgen. nov. (Yapuloni, Manchuria, ?, VII, 1938).
3. *Damaster (Koreacoptolabrus) constricticollis constricticollis* subgen. nov. (Huch'ang, PB, 15, VIII, 1936).
- 4,5. *Damaster (Koreacoptolabrus) constricticollis constricticollis* subgen. nov. (Mt. T'aebaeksan, GW, 28, VI, 1976).
6. *Damaster (Koreacoptolabrus) constricticollis chiricola* subgen. et subsp. nov. (Mt. Chirisan, GN, 13, VII, 1981).
7. *Damaster (Koreacoptolabrus) constricticollis chiricola* subgen. et subsp. nov. (Mt. Chirisan, GN, 6, VI, 1983).
8. *Damaster (Koreacoptolabrus) mirabilissimus* subgen. nov. (Mt. T'aebaeksan, GW, 27, VI, 1976).
9. *Damaster (Koreacoptolabrus) mirabilissimus* subgen. nov. (Mt. Odaesan, GW, 5, VIII, 1971).
10. *Damaster (Koreacoptolabrus) mirabilissimus* subgen. nov. (Mt. Myöngjisan, GG, 6, VI, 1976).
11. *Damaster (Acoptolabrus) gehini gehini* (Jyozankei, Sapporo, Hokkaido, Japan, 24, VI, 1979).
12. *Damaster (Acoptolabrus) gehini radiatocostatus* (Oiwake Pass, Hidaka, Hokkaido, Japan, 27-30, VIII, 1972).
13. *Damaster (Acoptolabrus) gehini sapporensis* (Apoidake, Hidaka, Hokkaido, Japan, 26, VIII, 1971).
14. *Damaster (Acoptolabrus) gehini munakatai* (Mt. Daisengendake, Hokkaido, Japan, 19-23, VIII, 1973).
15. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Kwanmobong, HB, 23, VIII, 1937).
16. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Myohyangsan, PB, 26, VII, 1937).
17. *Damaster (Coptolabrus) jankowskii jankowskii* (Kapsan, HN, ?, VII, 1926).
18. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Sölaksan, GW, 13, VI, 1970).
19. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Sölaksan, GW, 23, VII, 1970).
20. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Wangbangsan, GG, 6, VIII, 1976).
21. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Myöngjisan, GG, 19, VI, 1976).
22. *Damaster (Coptolabrus) jankowskii jankowskii* (Kwangnūng, GG, 15, VIII, 1971).
23. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Aengmubong, GG, 27, VI, 1971).
24. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Pukhansan, GG, 11, VII, 1976).
25. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Tobongsan, GG, 19, VIII, 1976).
26. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Tögamsan, GG, 6, IX, 1976).
27. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Yongmunsan, GG, 14, IX, 1980).
28. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Ch'iaksan, GW, 25, VIII, 1977).
29. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Sobaeksan, GB, 24, VII, 1977).
30. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Kyeryongsan, CN, 14, IX, 1975).

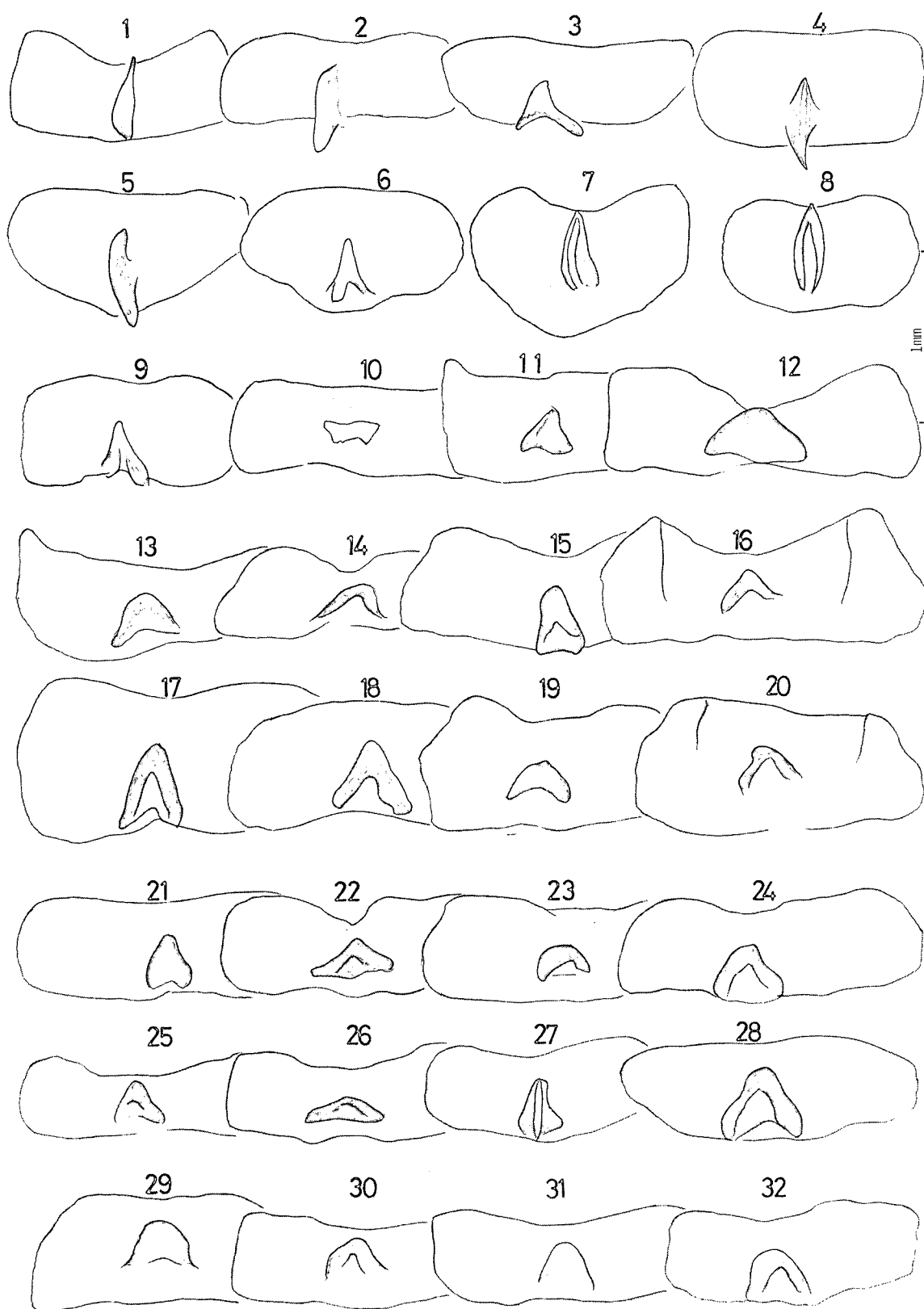


31. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Songnisan, CB, 10, VI, 1977).
32. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. P'algongsan, GB, 10, IX, 1982).
33. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. T'ohamsan, GB, 22, IX, 1982).
- 34,35. *Damaster (Coptolabrus) jankowskii jankowskii* (Mt. Chogyesan, JN, 5, VI, 1983).
- 36,37. *Damaster (Coptolabrus) jankowskii kangwonensis* subsp. nov. (Mt. Odaesan, GW, 9, VIII, 1976).

## Plate CVI.

### Female epivaginal sclerites of carabids (5).

1. *Damaster (Coptolabrus) jankowskii kangwonensis* subsp. nov. (Mt. T'aebaeksan, GW, 27, VI, 1976).
2. *Damaster (Coptolabrus) jankowskii fusanus* (Pusan, GN, 3, VI, 1977).
- 3,4. *Damaster (Coptolabrus) jankowskii kojensis* (Is. Kōjedo, GN, 22-31, VII, 1969).
- 5,6. *Damaster (Coptolabrus) jankowskii kojensis* (Mt. Kūmsan, in Is. Namhaedo, 13, VI, 1977).
- 7,8. *Damaster (Coptolabrus) jankowskii quelpartianus* (Mt. Hallasan, JJ, 22, VI, 1976).
9. *Damaster (Coptolabrus) jankowskii quelpartianus* (Chungmun, JJ, 20, VII, 1978).
10. *Damaster (Coptolabrus) fruhstroferi* (Mt. Mitake, Is. Tsushima, Nagasaki Pref., Japan, 27, IV, 1972).
11. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Kwanmobong, HB, 18, VII, 1932).
12. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Sōlaksan, GW, 22, VIII, 1969).
13. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Sōlaksan, GW, 17, IX, 1973).
- 14,15. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Odaesan, GW, 9, VIII, 1976).
16. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Pangdaesan, GW, 26, VII, 1974).
17. *Damaster (Coptolabrus) smaragdinus fulminifer* (Mt. Sobaeksan, GB, 6, VIII, 1980).
- 18,19. *Damaster (Coptolabrus) smaragdinus branickii* (Kwangnūng, GG, 25, VIII, 1968).
20. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Aengmubong, GG, 28, VIII, 1971).
21. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Tobongsan, GG, 19, VIII, 1976).
- 22,23. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Wangbangsan, GG, 2, VIII, 1977).
24. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Kyeryongsan, CN, 14, IX, 1975).
- 25,26. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. P'algongsan, GB, 24, V, 1983).
27. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. T'ohamsan, GB, 22, IX, 1982).
- 28,29. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Yōngch'wisan, GN, 2, VI, 1983).
30. *Damaster (Coptolabrus) smaragdinus branickii* (Sanin Myōn, GN, 28, V, 1983).
31. *Damaster (Coptolabrus) smaragdinus branickii* (Mt. Muhaksan, GN, 29, V, 1983).
32. *Damaster (Coptolabrus) smaragdinus branickii* (Is. Kōjedo, GN, 16-20, VII, 1970).



## Plate CVII.

### Female epivaginal sclerites of carabids (6).

1. *Damaster (Coptolabrus) smaragdinus branickii* (Is. Kōjedo, GN, 16-20, VII, 1970).
2. *Damaster (Coptolabrus) smaragdinus sangjaei* subsp. nov. (Mt. Chirisan, GN, 6, VI, 1983).
3. *Damaster (Coptolabrus) smaragdinus hoenggandoensis* subsp. nov. (Is. Hoenggando, JJ, 4, VIII, 1970).
4. *Damaster (Coptolabrus) smaragdinus monilifer* (Mt. Hallasan, JJ, 29, VII, 1978).
5. *Damaster (Coptolabrus) nankotaizanus* (Taiwan, ? VII, 1967).
6. *Damaster* (s. str.) *blaptoides rugipennis* (Asahigawa, Hokkaido, Japan, 8, VII, 1977).
7. *Damaster* (s. str.) *blaptoides capito* (Mt. Kinpokusan, Is. Sado, Niigata Pref., Honshu, Japan, 2-5, III, 1971).
8. *Damaster* (s. str.) *blaptoides fortunei* (Is. Awashima, Niigata Pref., Honshu, Japan, 31, III, 1970).
9. *Damaster* (s. str.) *blaptoides blaptoides* (Yamanomachi, Kobe Pref., Honshu, Japan, 10, III, 1968).
10. *Damaster* (s. str.) *blaptoides montanus* (Mt. Adatarasan, Fukushima Pref., Honshu, Japan, 8, IV, 1970).

### Male endophallic ligulae of carabids.

11. *Damaster (Koreacoptolabrus) constricticollis constricticollis* subgen. nov. (Mt. T'aebaeksan, GW, 28, VI, 1976).
12. *Damaster (Koreacoptolabrus) constricticollis chiricola* subgen. et subsp. nov. (Mt. Chirisan, GN, 6, VI, 1983).

PLATE CVII

